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C 23. 1947

MOTOR PER. AGE



Christmas

DECEMBER 1947 • A CHILTON PUBLICATION

THE ABC's of
**The A.B.C.'s of
 Piston Ring
 Performance**

Here are the Simple, Understandable Reasons for Steel-Vent's Longer Life

Hastings Steel-Vent has been progressively engineered over a long period of years to increase the life span of ring jobs—to lengthen the efficient, effective life of such jobs. All this engineering has been aimed at developing—

1. A ring that provides generous wall lubrication—always under control.
2. A ring that can't clog.

Hastings Steel-Vent's greater oil-carrying capacity provides generous wall lubrication, always under control. Its exclusive side-opening spacer operates against a moving segment with a "breathing" action that flushes away sludge and clogging particles of carbon. Steel-Vent just can't clog.

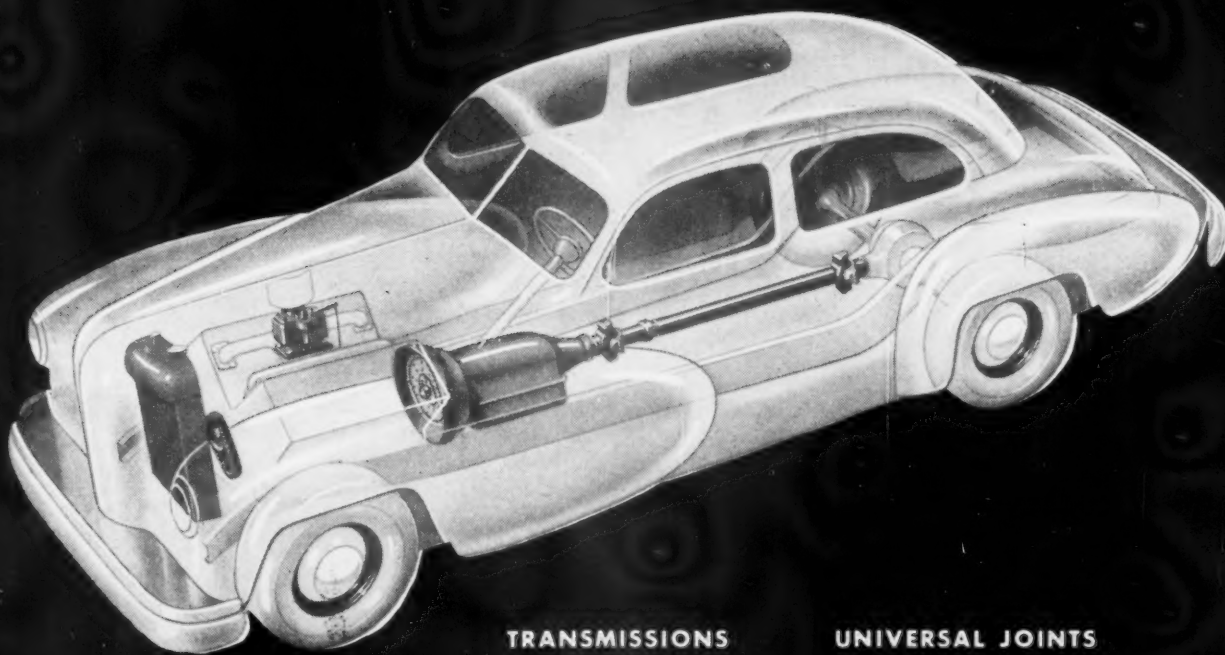
It's as simple as that.

HASTINGS MANUFACTURING COMPANY • HASTINGS, MICHIGAN
 Hastings Ltd., Toronto





19 of the 20
makes of motor cars
embody essential parts
made by BORG-WARNER!



TRANSMISSIONS
TIMING CHAINS
OVERDRIVES
SYNCHRONIZERS
CLUTCHES

UNIVERSAL JOINTS
DRIVE SHAFTS
CARBURETORS
RADIATORS
TAPERED WHEEL DISCS

Executive Offices, 310 S. Michigan Ave., Chicago. These units form Borg-Warner: BORG & BECK • BORG-WARNER INTERNATIONAL • BORG WARNER SERVICE PARTS • CALUMET STEEL • DETROIT GEAR • DETROIT VAPOR STOVE • FRANKLIN STEEL • INGERSOLL STEEL • LONG MANUFACTURING • LONG MANUFACTURING CO., LTD. • MARRON • MARVEL-SCHUEBLER CARBURETOR • MECHANICS UNIVERSAL JOINT • MORSE CHAIN • MORSE CHAIN CO., LTD. • NORGE • NORGE-HEAT • NORGE MACHINE PRODUCTS • PESCO PRODUCTS • ROCKFORD CLUTCH • SPRING DIVISION • SUPERIOR SHEET STEEL DIVISION • WARNER AUTOMOTIVE PARTS • WARNER GEAR • WARNER GEAR CO., LTD.

The most advertised hat in America!



116,762,844 *FIRE-CHIEF*
messages in magazines... during 1947!

IT'S no wonder that the famous Texaco *Fire-Chief* hat is such a familiar gasoline symbol to millions of motorists all over America!

That amazing circulation figure above is the actual number of magazines in which *Fire-Chief* copy appeared this year. You can multiply that figure by 2, 3 or more readers per magazine and you can readily see how *Fire-Chief* magazine advertising reaches a mighty big part of America's car owners... time and time again.

Add to this a few billion *Fire-Chief* outdoor poster messages, plus the millions of listeners who hear about *Fire-Chief* on the *Texaco Star Theater* radio program every Sunday night and you know why we say this is the most advertised hat in America.

Then remember that *Fire-Chief* is just one of several Texaco Products supported by individual advertising campaigns and you see how advertising helps make *Texaco Dealers* such busy dealers!

THE TEXAS COMPANY

**A Great Line-up for
TEXACO DEALERS**

Sky Chief and **FIRE-CHIEF** GASOLINES
HAVOLINE and TEXACO MOTOR OILS • MARFAK
CHASSIS LUBRICATION • REGISTERED REST ROOMS

TUNE IN... TEXACO STAR THEATER presents the TONY MARTIN show featuring Alan Young every Sunday night.
METROPOLITAN OPERA broadcasts every Saturday afternoon. See newspaper for time and station.

In the Spotlight...

SINCE
1909



COMPLETE LINE OF CHEMICAL MAINTENANCE PRODUCTS

by

PERMATEX COMPANY, INC., BROOKLYN 29, N.Y., U.S.A.

**MORE
LIGHT
WHEN NEW!**

**MORE
LIGHT
FOR LIFE!**



Cutaway view of G-E Lamp

- FILAMENTS HELD IN VISE-LIKE GRIP
- MIRROR-LIKE REFLECTOR
- HARD-GLASS PRECISION LENS
- ONE-PIECE CONSTRUCTION

G-E Sealed Beam Lamps Do Not Grow Dim!

MORE LIGHT WHEN NEW! Now the new G-E Sealed Beam lamps give more light on the road than ever before—12% more for driving and 16% more for passing.

MORE LIGHT FOR LIFE! The whole lamp is one all-glass unit. Dirt and moisture *can't* get into it to dull the reflector. Actual tests prove that the average G-E Sealed Beam lamp maintains 99% of "new car" light output up to the very end of lamp life. They *do not grow dim!*

Want the proof? Then try this yourself.

Take a General Electric Sealed Beam headlamp that's been used for a long time. Wipe the lens. Hold a new G-E Sealed Beam lamp next to it. Compare the two. You'll see the same bright, sparkling look. The old lamp *has not grown dim!*

KEEP A GOOD STOCK ON HAND. Wintertime is night-driving time. So you'll sell more lamp replacement jobs. Don't lose profitable sales by being out-of-stock. Your distributor can supply all the G-E Sealed Beam lamps you need.

**FOR EVERY SOCKET . . .
FOR EVERY CAR**



G-E LAMPS
GENERAL  ELECTRIC

As Advertised in the **POST**

MOOG
AUTOMOTIVE REPLACEMENT PARTS

A Great Name
IN AUTOMOTIVE MAINTENANCE

MOOG X-PLUS PISTON RINGS restore FULL POWER in worn motors, stop oil pumping and blow-by, give FULL POWER Performance with gasoline and oil economy. The revolutionary Moog Piston Expanding Method restores collapsed pistons permanently and economically.

MOOG SPRING SUSPENSION PARTS — for safe, cushioned driving. Famous Moog Electrically Heat Treatment assures highest quality and long life. The most complete line of Spring Suspension Replacement Parts on the market.

The car owner and repairman have confidence in Moog, a Great Name in Automotive Maintenance.

MOOG INDUSTRIES, INC., ST. LOUIS
DIVISIONS:
MOOG PISTON RING CO. • ST. LOUIS SPRING CO. • MOOG COIL ACTION PARTS CO.
Branches and Warehouses in Principal Cities

PISTON RINGS • COIL ACTION FRONT END PARTS • ELECTRICALLY HEAT TREATED SPRINGS • OVERLOAD HELPER SPRINGS • CHASSIS PARTS

DECEMBER, 1947

When writing to advertisers please mention Motor Age

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MOTOR AGE, Vol. LXVII, No. 1. Published monthly by Chilton Co., Chestnut & 56th Sts., Phila. 39, Pa. Entered as Second-Class Matter December 27, 1935, at the Post Office at Philadelphia, Pa.; Under the Act of Congress of March 3, 1879. In case of Non-Delivery Return Postage Guaranteed. Subscription price: United States, Mexico, United States Possessions, and all Latin-American countries, \$2.00 per year. Canadian and foreign, \$3.00 per year; single copies, 25 cents.

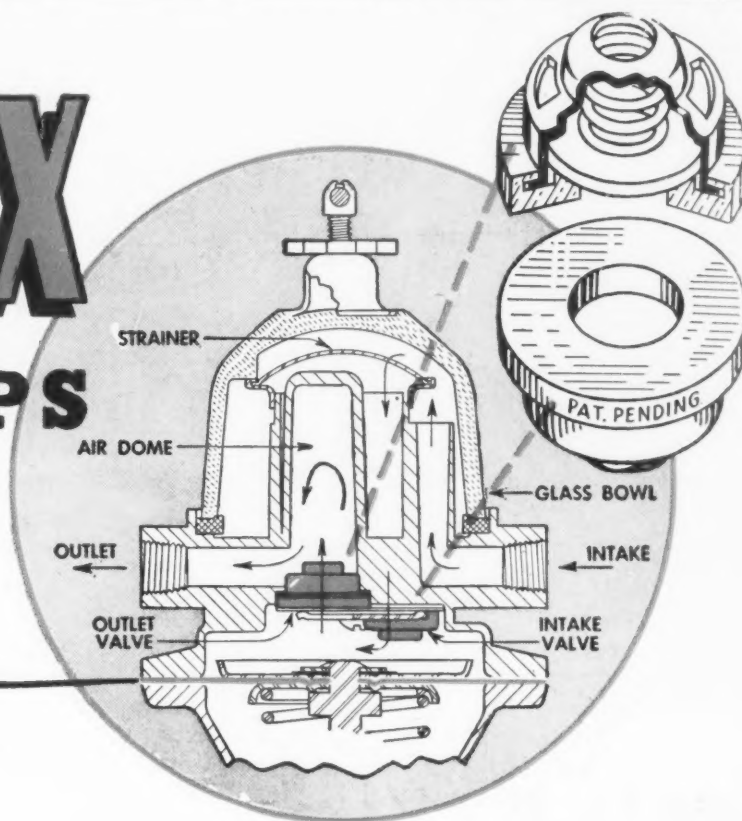
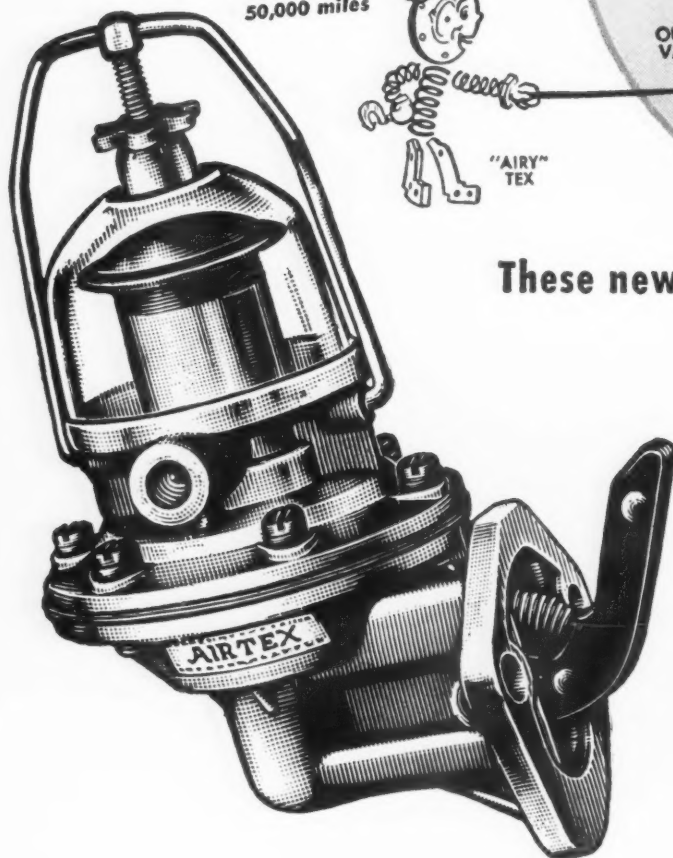
New TIGHT-SEAL VALVES

INSURE LONGER LEAK-PROOF LIFE

AIRTEX

FUEL PUMPS

Equipped with
AIRTEX DIAPHRAGMS
Guaranteed for
50,000 miles



These new valves an exclusive AIRTEX feature

- The new construction eliminates the need for internal gaskets as used in conventional type valves. Valve failure due to gasket deterioration is therefore impossible.
- The possibility of leakage is minimized because there are fewer paths where leaking may develop.
- Every valve seat surface is burnished to insure a maximum degree of contact with the valve disc.
- The precision machined finish of the external surface provides a better seal between valve assembly and fuel pump casting.
- The valve is designed to permit an instant and ample flow of fuel to the carburetor.
- Every valve is tested individually to assure the accuracy of its sealed surfaces. This is accomplished by means of a Rotometer which registers unmistakably the slightest degree of leakage.

ORDER FROM YOUR JOBBER

AIRTEX AUTOMOTIVE DIVISION

Chefford Master Mfg. Co., Inc.
FAIRFIELD, ILLINOIS

Sell an AIRTEX Gasoline Filter-DAMPER with every tune-up job



CAR OWNERS HAVE

CONFIDENCE IN DELCO BATTERIES

because—

Delco batteries are original equipment on leading makes of cars, trucks, buses and farm tractors.



DELCO BATTERIES—A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS

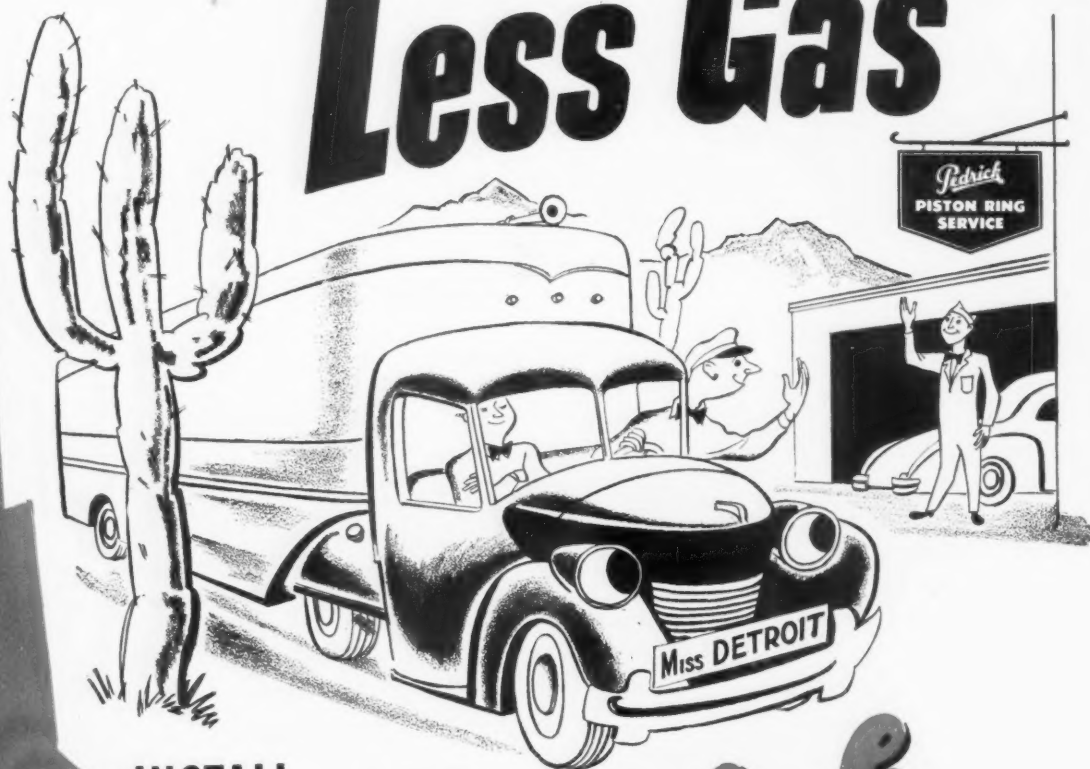
Delco-Remy

DIVISION, GENERAL MOTORS CORPORATION
ANDERSON, INDIANA

WHEREVER WHEELS TURN OR PROPELLERS SPIN

MORE MILES WITH

Less Gas



INSTALL

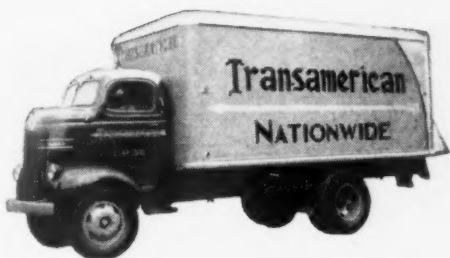
Pedrick

**"HEAT-SHAPED"
PISTON RINGS**

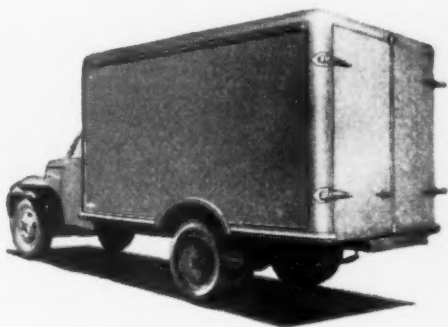
● "Heat-Shaping" distributes correct tension around the entire circumference of the ring. This helps squeeze the last ounce of power from every drop of fuel. It saves oil, too, and increases engine life. Only Pedrick piston rings are "Heat-Shaped." Available from any Pedrick distributor in guaranteed Engineered Sets for all popular vehicles. WILKENING MANUFACTURING CO., Philadelphia 42, Pa. In Canada: Wilkening Manufacturing Co., (Canada) Ltd., Toronto.

MODERN DELIVERY BODIES FOR ALL PURPOSES

Solidly built of extra strength steel and welded throughout into an integral, weather-tight unit, these bodies meet every delivery purpose.



Standard "cargo tested" van—smooth clean lines—protective rub rails—all-steel roof welded to rounded steel corners and upright sections. Cargo capacities: 9', 423.6 cu. ft.; 12', 564.2 cu. ft.; 14', 657.9 cu. ft.; 16', 751 cu. ft.



Wheelhouse vans have definite advantages. Easier loading (body and floor 9" lower than standard). Available in 9, 12, 14 and 16-foot lengths.



The Packette all-purpose package delivery mounts on any flatface cowl chassis of 120" to 137" wheelbase. Dimensions (back of seat) 102" or 114" long, 75" wide, 64" high. Cargo space 276.3 cu. ft. or 306.3 cu. ft. respectively.

There is a wide choice of door and tailgate combinations including: double rear doors, with or without tailgate; Dutch (3) doors over tailgate and side doors. Open top models with removable bows are available in all models—special beverage bodies with roof rail and ladder—also insulated bodies with plywood sides and ceiling.

3 BIG REASONS

WHY HUNDREDS OF TRUCK
OPERATORS ARE NOW
SPECIFYING

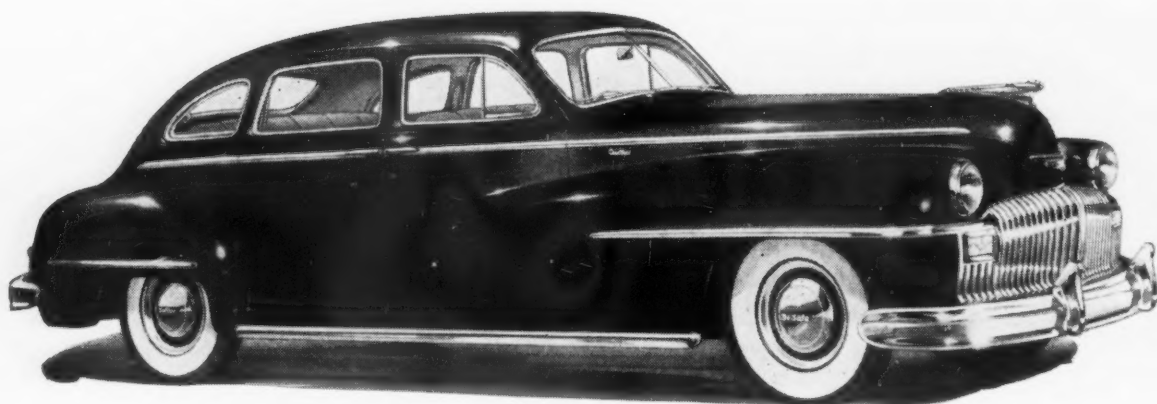
OLTMAN-O'NEILL VAN and PACKETTE "CARGO-TESTED" BODIES

- 1 TOP QUALITY all-steel, all-welded construction making one solid steel body structure from sills to roof. Extra tough bodies for extra tough work.
- 2 LOWEST PRICES in the industry for all-welded van bodies of high tensile steel made on modern assembly lines. Mass production insures low cost.
- 3 IMMEDIATE DELIVERY on your new truck chassis. Ample stocks plus increased manufacturing facilities insure immediate deliveries.

You, too, will save time and money by ordering new trucks delivered complete with Olتمان-O'Neill Bodies. Ask your truck dealer for details . . . or write for literature.

OLTMAN-O'NEILL CO.
TRUCK BODIES THAT PAY-ALL THE WAY
5171 Martin Ave. Detroit 10, Mich.

Excellence **WILL ALWAYS TELL**

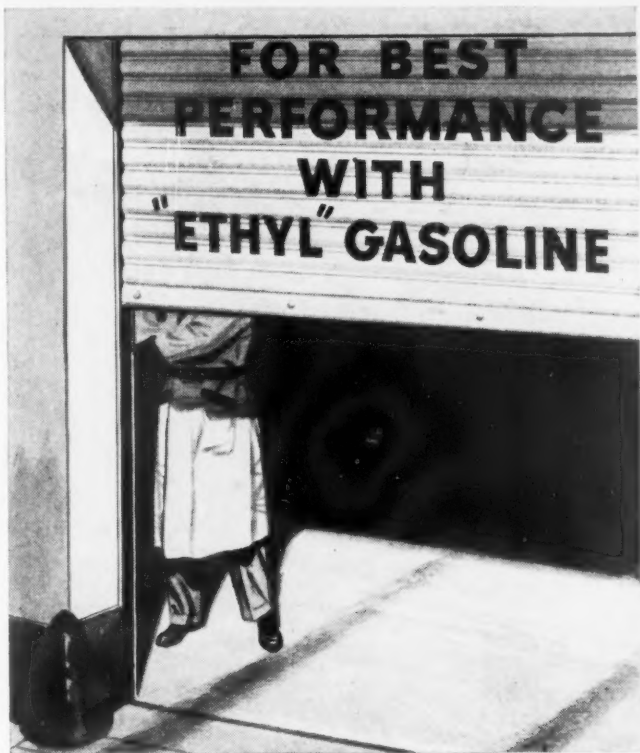
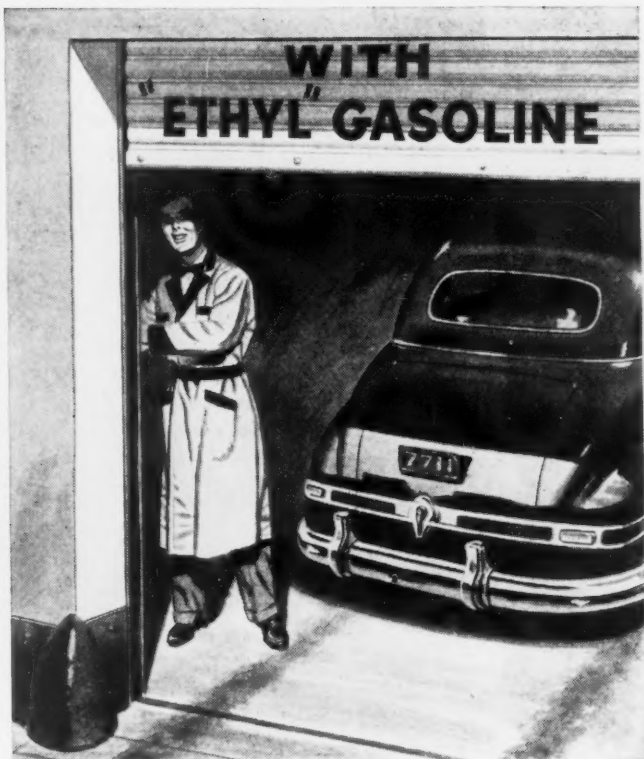


DeSoto stands for excellence among drivers everywhere. Proof is found in a nationwide poll, where the overwhelming majority of new DeSoto owners declared, "It's the best car I ever owned, regardless of price!" These ten words mean promising futures for DeSoto-Plymouth Dealers.

DE SOTO

LETS YOU DRIVE WITHOUT SHIFTING

TUNE IN "CHRISTOPHER WELLS"—THE DESOTO-PLYMOUTH DEALER PROGRAM—EVERY SUNDAY NIGHT ON ALL COLUMBIA (CBS) STATIONS



People who have new cars expect smooth, effortless, new-car performance. But no car can deliver its best effort unless the ignition timing is set for top power. With gasoline of higher antiknock value—"Ethyl" gasoline—you can give your customers all the power and performance that was built into their engines.

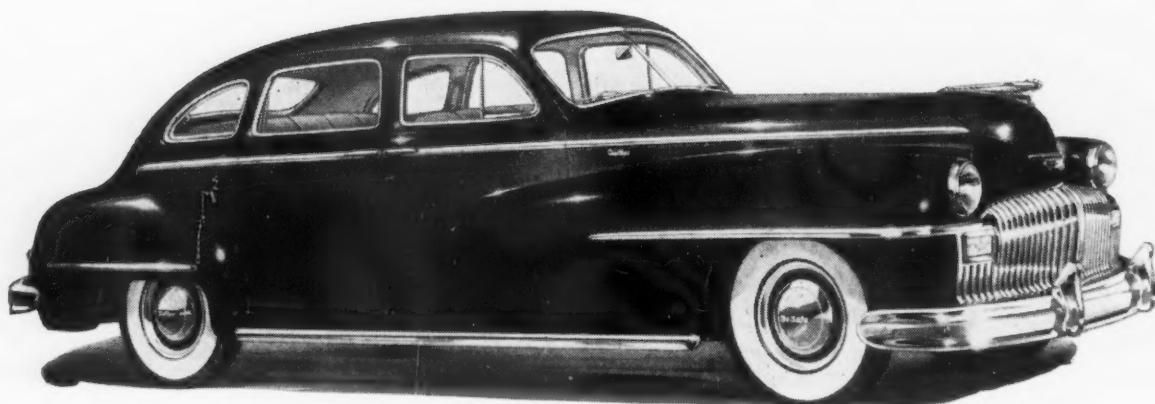
ETHYL CORPORATION, New York, N. Y.

24 years' service to America's progressive petroleum industry.



Products sold under the "ETHYL" trade-mark—Antiknock Compound... Detergent Cleaner... Salt Cake... Ethylene Dichloride... Sodium Metallic... Chlorine (liquid)... Oil Soluble Dye.

Excellence **WILL ALWAYS TELL**

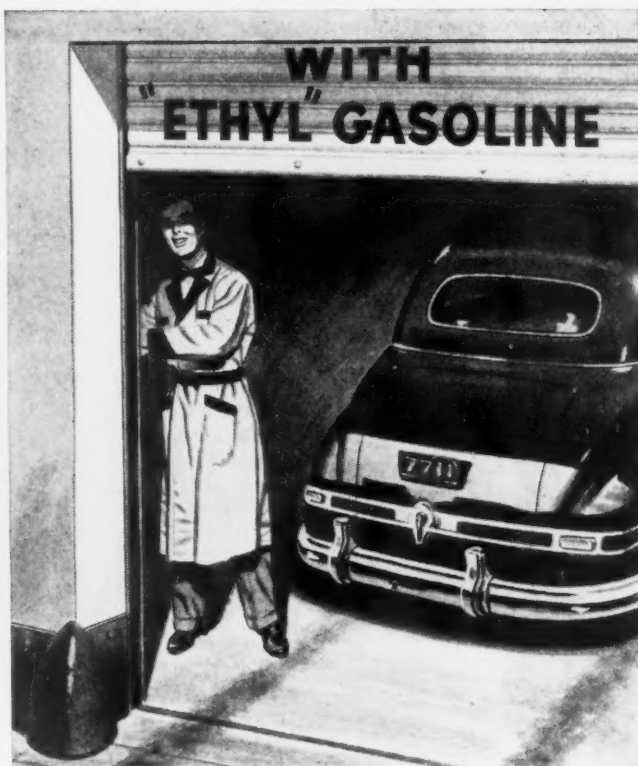


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DE SOTO

LETS YOU DRIVE WITHOUT SHIFTING

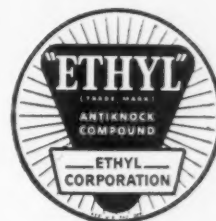
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ETHYL CORPORATION, New York, N. Y.

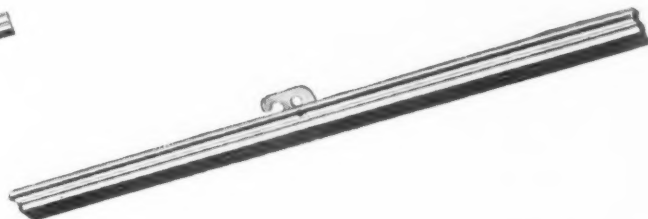
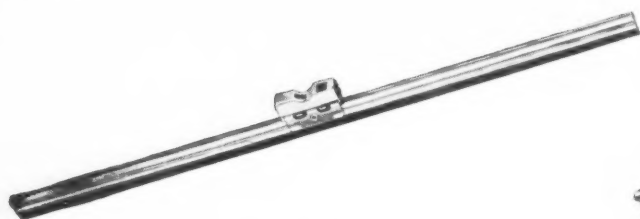
24 years' service to America's progressive petroleum industry.



Products sold under the "ETHYL" trade-mark—Antiknock Compound... Detergent Cleaner... Salt Cake... Ethylene Dichloride... Sodium Metallic... Chlorine (liquid)... Oil Soluble Dye.

This New Trico Universal Arm

fits BOTH...the new
Trico Wrist-Action Blades *and* all Trico Clip-type Blades



fits ALL cars...new or old!

• Quick action is what your customer wants...and what YOU want... when a wiper arm needs replacement.

You can give it to him with TRICO'S new Universal Arm. No hunting around. No fumbling. No pawing through a lot of sizes, gadgets, fittings. IT'S ALL IN EACH INDIVIDUAL BOX...everything you need for clip-type or wrist-action type blades and for any type shaft.

You'll waste no time, either, on a selling song-and-dance. Just say, "It's a TRICO...the kind that's standard on millions of cars." Nationally advertised.

TRICO PRODUCTS CORPORATION, BUFFALO 3, N. Y.



Windshield Wipers

• Adjustable for
blade length
and angle

• Attaches to
any shaft

Pre-tested for Accuracy

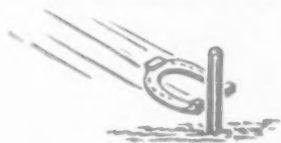
**FACTORY
MATCHED**

DUCO COLORS

...over 700 colors
available

...for practically
any make,
any model

ACCURATE...



DUCO Colors are precision-matched to car-makers' standards by Du Pont factory experts.

READILY AVAILABLE...



Your color requirements are quickly met . . . you'll find one of Du Pont's 1500 stock points convenient to your shop.

UNIFORM...



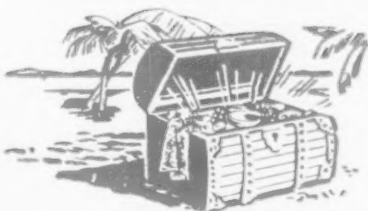
Rigid laboratory tests check each batch of "DUCO" color before it goes to you.

ECONOMICAL...



Time, labor, materials . . . there's greater thrift all round when you let Du Pont do your color matching for you!

GOOD BUSINESS...



A perfect job every time! That's what "DUCO" means to your customers. And that's why it pays to be associated with the best known of automotive finishes—"DUCO"!

E. I. du Pont de Nemours & Co. (Inc.), Finishes Division,
Refinish Sales, Wilmington 98, Delaware.

FOR PERFECT BALANCE
depend on "DUCO" Thinners!
"DUCO" Thinners are balanced . . . made
to work perfectly with "DUCO"!

Thanks to good flow, unusual solvent strength, and excellent blush resistance, "DUCO" Thinners help you give every customer the best possible job. Use them always for best results!



REG. U. S. PAT. OFF.

DUCO

REG. U. S. PAT. OFF.

BETTER THINGS FOR BETTER LIVING
...THROUGH CHEMISTRY

**MATCHED
COLORS**

*Better for your customer—
Better for you—*

the CARTER REPAIR PACKAGE



PREVENT costly comebacks — Carter Repair kits take the guesswork out of deciding which parts to select — one convenient package includes all items necessary to replace those subject to normal wear.

Your customer appreciates the economy of a thorough job — and the better performance it gives him. You build a better business.

When servicing any Carter Carburetor order a Carter Repair Package from your nearest Carter distributor or jobber.

CARBURETOR

TRADE MARK REG. U. S. PAT. OFF.
MARCA REGISTRADA



CARTER CARBURETOR CORPORATION, St. Louis 7, Missouri

Division of American Car & Foundry Company

555



Quick Starts ... Long Life

WILLARD BATTERIES — Automobile
Truck and Bus • Radio • Motorcycle
Tractor • Aircraft • Marine • Diesel
Stationary — Sold and serviced
by Willard Dealers everywhere.

Willard "SAFETY-FILL"
BATTERIES

Dependability • Performance • Long Life

WILLARD STORAGE BATTERY CO. • CLEVELAND • LOS ANGELES • DALLAS • TORONTO

RING OUT THE OLD RING IN THE NEW



RING THE BELL FROM THE START!



Your best "piston ring year" is just around the corner from this New Year's Day. The improved design and the hard hitting promotion of LEAK-PROOF rings will make your cash register ring its happiest tune in 1948. Suggest LEAK-PROOF to every piston ring prospect and let years of advertising and millions of satisfied customers make your sales job easier.

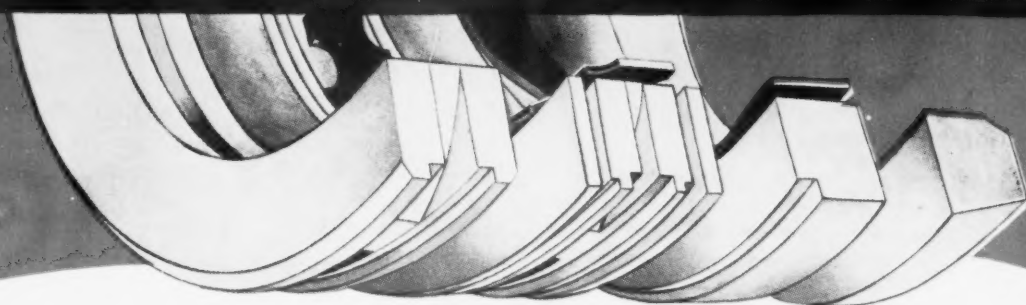
A NEW PRODUCT OF McQUAY-NORRIS

GO GREAT ^{IN '48} WITH...

LEAK-PROOF

REG. U. S. PAT. OFF.

PISTON RINGS



GUARANTEED TO DO ALL 4



**Keep
oil down**

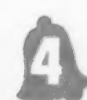


**Give smooth,
new motor
operation**

Yes GUARANTEED



**Keep
power up**



**Give
longer life**

... guaranteed to give satisfactory performance for 10,000 miles or one year, whichever shall occur first, under the McQuay-Norris LEAK-PROOF Piston Ring Replacement and Labor Guarantee available upon request.

MANUFACTURING CO. ST. LOUIS 10, MO. U.S.A.

GOOD MECHANICS ARE SCARCE

Quality as well as quantity of mechanics ranks close to the top of management problems confronting car-truck dealers and independents operating the larger automotive repair-shops. The manpower shortage naturally is far less acute than in the war years but many of the "old timers" who migrated to munitions plants "disappeared" after V-J Day and the number of younger men obtainable is much smaller than had been expected.

From a recent issue of MoToR

How to Mechanic

GET 'EM OFF

with



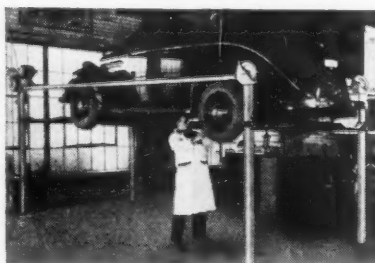
Healthy, contented mechanics—each with his own lift

SOME OF THE ACTUAL SAVINGS FROM SHOPS USING LIFTS FOR MECHANICAL SERVICES

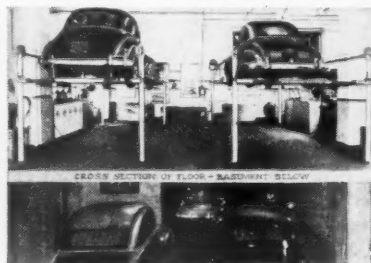
BRAKES, overhaul.....	30-50%
DIFFERENTIAL, overhaul.....	20-25%
EXHAUST SYSTEM, repair.....	30-50%
OIL PAN, remove.....	30-40%
SHOCK ABSORBERS, service.....	20-30%
STARTER, remove.....	30-50%
STEERING LINKAGE, adjust.....	30-50%
TIRES, switch.....	50-65%
TRANSMISSION, remove.....	20-25%
UNDERBODY, tighten.....	25-40%
UNIVERSAL JOINT, remove.....	25-40%

For UNDERCOATING, a Lift is a definite "must"

HERE'S WHY THE WALKER ELECTRIC LIFT IS THE IDEAL LIFT FOR MECHANICAL SERVICES



The Open Work Zone beneath the car and unobstructed working conditions on the car combine to give your mechanics complete freedom of movement.



You can install a Walker Electric Lift, quickly and easily, any place your Service Department is located—without excavations or other expensive extras.



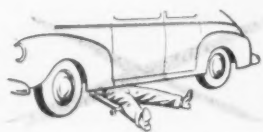
Average size of service order is increased through complete exposure of the entire underbody of the car and through showing and explaining to customer.

WALKER MANUFACTURING COMPANY OF WISCONSIN.

Keep From Having a Shortage in Your Own Shop

THEIR BACKS AND ON THEIR FEET

Lifts for Mechanical Services



NO MECHANIC likes to work lying on his back on a drafty floor all cramped up under a car. And nowadays mechanics know they don't have to. They know that inefficient, unpleasant "creep-under-crawl-out" working conditions are fast becoming a thing of the past. They know that in the modern, up-to-date shop mechanical service work is done on lifts where a man can work standing on his feet, in the open, with plenty of elbow room.

Good mechanics know they can earn more money in a lift-equipped shop because they can turn out more work, faster and with less fatigue. And this means *more* money for you—not less. With lifts for mechanical service, the same me-

chanics in the same size shop can increase your service volume—and *profit*—anywhere from 20% to 50%.

And when you choose your lifts, remember the effectiveness of a lift is directly dependent upon complete freedom of movement for the mechanic. Any obstruction in the work zone beneath the car is bound to reduce his efficiency and thereby subtract from the gains otherwise made. So standardize on a lift with an open work zone, a lift with nothing in the way above or under foot, a lift that is really open for business—a WALKER ELECTRIC LIFT.

Your service profits depend on how quickly and how efficiently each job can be finished. Send for free booklet telling how "Joe" increased the profits of his service department by 30% with no increase on mechanic-power.



WALKER ELECTRIC LIFTS

The Lift with the OPEN WORK ZONE



WALKER MANUFACTURING CO. OF WIS.,
RACINE, WIS.

Please send me a free copy of your booklet:
"How Joe Increased the Profits of his Service
Department by 30%"

NAME _____

ADDRESS _____

CITY _____ ZONE _____ STATE _____

RACINE, WIS. Also Makers of Walker Jacks and Walker Silencers



SELL WAGNER LOCKHEED 21... AMERICA'S LEADING BRAKE FLUID!

Used in New Cars

WAGNER LOCKHEED 21...TRUCK, BUS, AND CAR MANUFACTURERS USE IT

Most Advertised

WAGNER LOCKHEED 21...ADVERTISED MORE THAN ANY OTHER BRAKE FLUID

Largest Selling

WAGNER LOCKHEED 21...NATIONALLY OUTSELLS COMPETITION

Wagner Electric Corporation
6498 PLYMOUTH AVE., ST. LOUIS 14, MO., U. S. A.



**LOCKHEED HYDRAULIC BRAKE PARTS and FLUID • NoRoL
CoMaX BRAKE LINING • AIR BRAKES • TACHOGRAPHS
ELECTRIC MOTORS • TRANSFORMERS • INDUSTRIAL BRAKES**

BRASS FITTING PROTECTION

is

IN THE BAG!



Packaged 5 fittings to the bag

EDELMANN & CO.
INTRODUCES A REVOLUTIONARY
NEW METHOD FOR PROTECTING
BRASS FITTINGS

in Plastic Bags

- THEY'RE TRANSPARENT!
- THEY'RE PRACTICAL!

Dealers everywhere are welcoming with open arms the new Edelmann plastic protection for brass fittings. No longer can corrosion or mashing ruin finely machined threads. Fittings are carefully packed five to a bag and then flame-sealed against moisture and dirt. Edelmann fittings reach your hands in perfect "factory-fresh" condition. Identification cards sealed in the bags plainly show the number, description and thread sizes. Wasted space of half-filled boxes is entirely eliminated.

TRANSPARENT — Fittings are clearly visible for identification and counting

TOUGH — Bags cannot crack, split or deteriorate; will stand up under the roughest handling

FLAME-SEALED — Keeps moisture and dirt out—permanently

PROTECTION — Small quantity packages protect finely machined threads

IDENTIFICATION CARDS — Fixed to inside of bag show clearly part number, description and thread sizes



The World's Finest
BRASS FITTINGS

For over 35 years, dealers have depended upon E. Edelmann & Co. for the world's finest brass fittings. All are made of the best materials available, by skilled workmen using the most modern manufacturing facilities. Demand the Best—and Get the Best. Ask for Edelmann Brass Precision-engineered Fittings in the protective Plastic Bag.

E. EDELMANN & CO. 2332-56 LOGAN BOULEVARD
CHICAGO 47, ILLINOIS



DEALERS: SUGGEST LYON WHITEWALLS AND WHEEL COVERS AS

Christmas Gifts!



S AS IDEAL



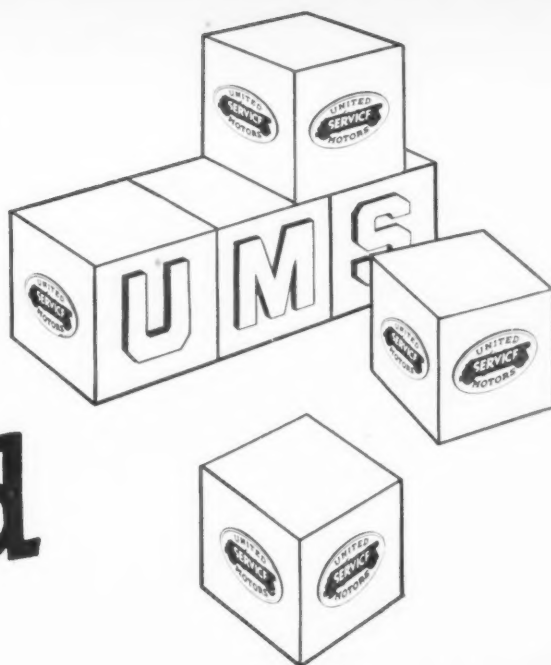
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Hyatt Roller Bearings—Harrison Radiators, Ther-
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UNITED MOTORS SERVICE

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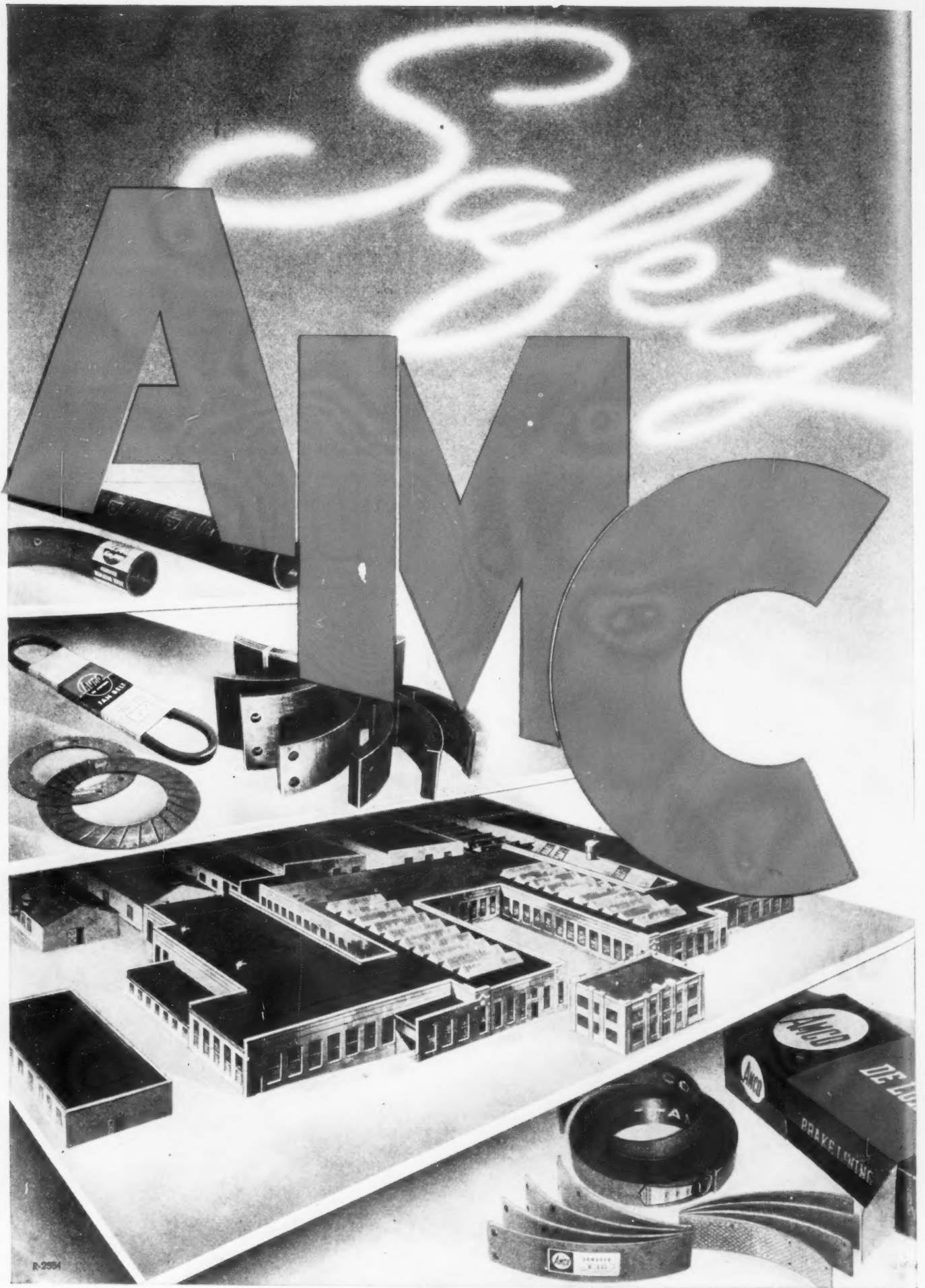
Nuggets, the tradition-smashing socket wrenches with the **DOUBLE-DUTY** drive, are being delivered to thousands of happy mechanics now! You, too, can get in line for Nuggets by placing an order now, with the nearest Blackhawk Jobber. And, man, look at the amazing Nugget benefits you get! For example, 49 Nuggets do the work of 65 ordinary wrenches, yet weigh only 61% as much. You **SAVE MONEY** too . . . up to 40% of your wrench investment. And wait 'til you get the actual "feel" of these beauties. Their slip-proof grip and feather-weight handles will make you a Nugget fan for life!

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(1) Safety-RATED by toughest car factory proving-ground tests, (2) Safety-RATED by multiple inspections during manufacture, and (3) Safety-RATED by BILLIONS OF BRAKE MILES under every service condition.

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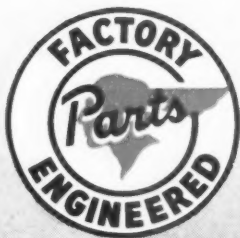
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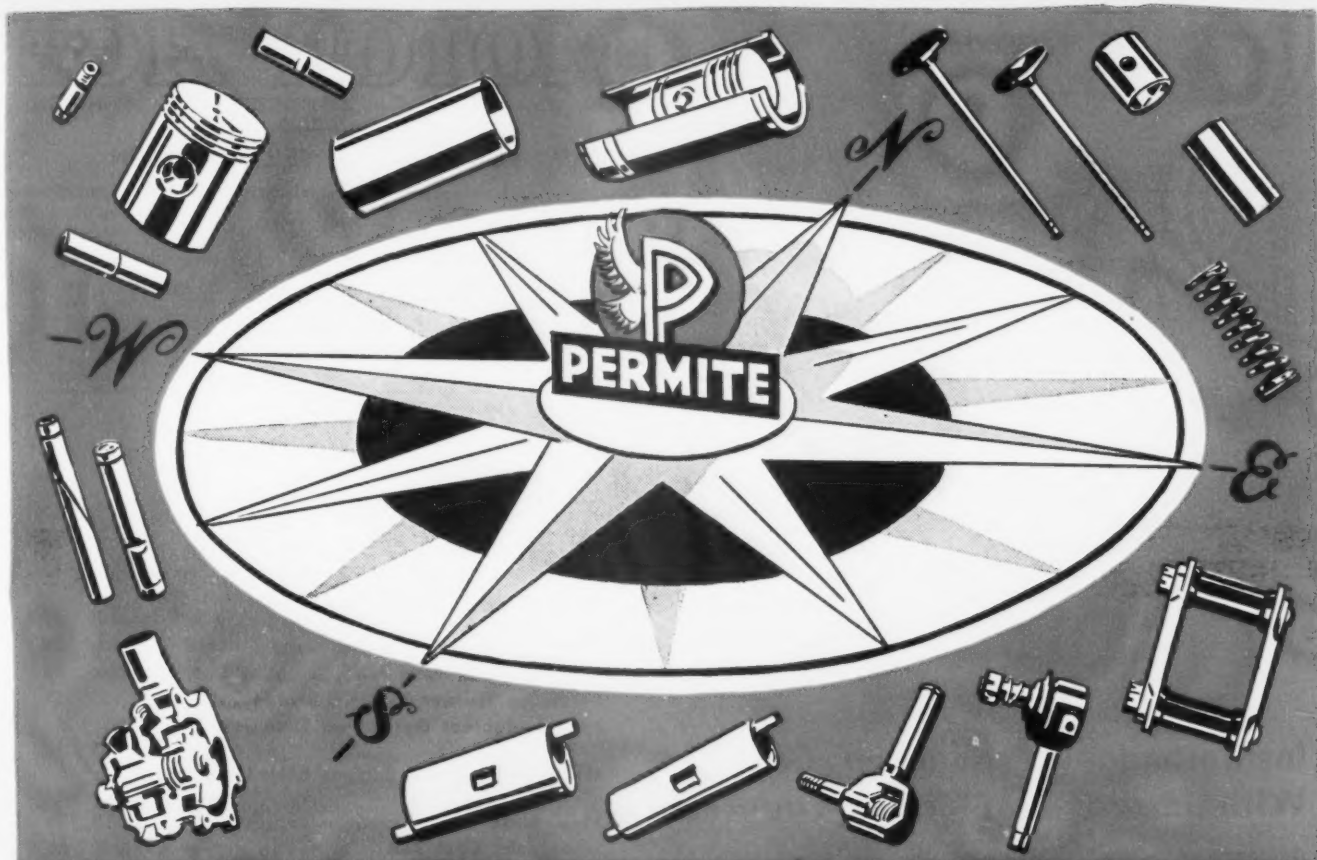
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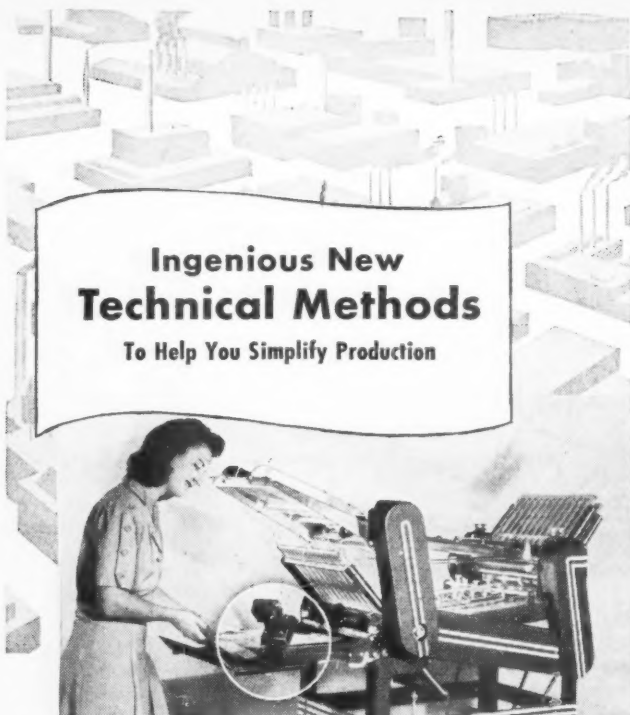
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AND ASSEMBLIES
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BOLT SETS
BUSHINGS

MUFFLERS
AND CLAMPS
TAIL PIPES



Ingenious New Technical Methods

To Help You Simplify Production

Instantaneous Production Control With Improved Electric Counter

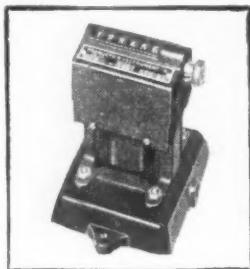
Accurate, up-to-the-minute counting of the production on this Davidson Folding Machine is done with the WIZARD Electric Counter.

New opportunities for more efficient production and elimination of over-run waste are created by WIZARD Electric Counters. These electrically-operated devices count any object or motion that will operate a switch, relay or photo-electric unit. Objects can be counted photo-electrically without physical contact and without risk to fragile or freshly-painted objects.

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The Wizard Electric Counter



AB-81

MOTOR AGE

With Which Is Combined AUTOMOBILE TRADE JOURNAL

FOR AUTOMOTIVE SERVICEMEN

VOL. LXVII, No. 1

December, 1947

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Complete with adapters for all sizes of plugs, 5-lb. can of compound, and spare nozzle.

You can't afford to operate a worn-out spark plug cleaner. The AC Model F cleans plugs in 5 seconds—does better work—lasts longer—and saves you money in wages.

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You can use it with your old water trap, if you have

one. It's easy to operate—with dual valve mechanism and adapters that automatically place the plug in the correct cleaning position. No bag to empty. No flying dust outside.

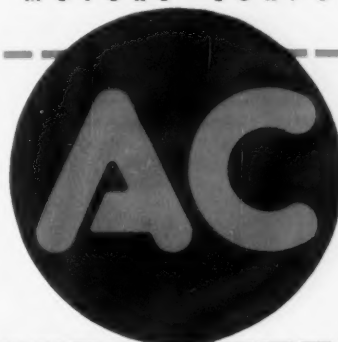
As you know, you'll sell 2 new plugs for every 6 you clean—and you'll clean them better, quicker and cheaper with the AC Model F.

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MODEL F GIVES YOU THESE NEW FEATURES FOR ONLY \$12.65

- ONE-PIECE DIE CAST SHIELD AND LEVER ARM.
- ONE-PIECE DIE CAST MIXING CHAMBER, bolted to cover plate.
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- COMPOUND TUBE ASSEMBLY is also replaceable.
- ALL WEARING PARTS ARE EASILY REPLACEABLE.



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has the only Ring with the

*Full-Flow
Spring*



6 exclusive advantages!

The Sealed Power MD-50 Steel Oil Ring now has the greatest steel ring improvement in 10 years! Sealed Power engineers have done it again! This new Sealed Power Full-Flow Spring is the *only spring made* which insures complete freedom of oil flow—through ring, spring, and piston groove oil holes or vents! It's the best because:

- 1 Increased direct ventilation of new Full-Flow Spring gives improved oil economy over a longer period.
- 2 The double ventilation in the new Full-Flow design gives far greater independent spring action to steel segments—an important feature in tapered and out of round bores.
- 3 New Full-Flow Spring leaves all slots in cast iron spacer and all oil holes in piston open and unobstructed for full flow of oil, making it highly resistant to carbon formation.
- 4 Exclusive design of new Full-Flow Spring compensates for greater variation in groove depth without loss of tension.
- 5 Exclusive design of new Full-Flow Spring, giving a greater bearing area at points of contact with both piston and ring, assures longer spring life.
- 6 The Full-Flow Spring will absolutely retain its original efficiency and inherent shape characteristics throughout the life of the ring.

Only the new Sealed Power Full-Flow Spring gives you all these advantages. Available in Sealed Power "X" Sets featuring the MD-50 Steel Oil Ring—**THE ONLY RING WITH THE FULL-FLOW SPRING!** Sealed Power Corporation, Muskegon, Michigan. In Canada, Stratford, Ont.

Piston Rings, Pistons, Cylinder Sleeves, Piston Pins, Valves,
Water Pumps, Bolts, Bushings, Tie Rods, Front End Parts

**The only ring with the
Full-Flow Spring!**

SEALED POWER

Piston Rings

BEST IN NEW CARS!

BEST IN OLD CARS!



NEWS BULLETIN

★ Some form of consumer credit legislation to replace Regulation W is expected early in the year.

★ Jack Wiggins advises that 34 new members have been added to the roster of N.S.P.A.

★ Salt solutions are once more being offered as anti-freeze. Dealers should investigate all anti-freeze carefully to be sure that it is non-corrosive.

★ Chrysler engineers at a meeting of the S.A.E. suggested the adoption of still lighter engine oils for easy starting in sub-zero weather.

★ California, Connecticut, Maryland, Vermont and Rhode Island, have increased gasoline taxes. Twenty-two states have liberalized regulations governing truck weights and sizes.

★ Forecast is that 1948 production will be the highest in history, even surpassing 1929 when 5,350,000 vehicles were produced.

★ N.A.D.A. reports a slump in price of used cars in Detroit area. However, this may be of a purely seasonal nature.

★ Chevrolet sold a record-breaking 29,461 trucks during October.

★ About 15,000 veterans are now studying to be automobile mechanics.

★ The Department of Justice has ruled that it is necessary to retain all O.P.A. records for another two years.

★ Tire production continued at a record-breaking pace through September with 57,420,758 passenger car casings rolling off the lines during the first nine months.

★ Standard Oil rations gasoline to its dealers in Alabama.

★ Tire prices are upped 5 to 10 per cent by most manufacturers.

★ Checker Cab is planning to build passenger cars in near future.

★ Studebaker expects their 1947 output to be 57 per cent greater than 1946.

★ Dopesters are guessing Ford will announce new models in April.

★ Texaco is to open laboratory for jet engine fuel.

Starts on the NEWS

New Passenger Car Registrations*

Arranged by Makes in Descending Order According to the 1947 Nine Months' Total.

MAKE	September 1947	August 1947	September 1946	NINE MONTHS			
				Units		Per Cent of Total	
				1947	1946	1947	1946
Chevrolet.....	43,825	53,459	43,292	473,246	167,905	20.45	15.48
Ford.....	44,664	42,082	37,546	381,865	207,420	16.50	19.12
Plymouth.....	27,841	27,284	25,296	234,478	148,387	10.13	13.68
Buick.....	22,290	19,995	18,918	177,054	62,292	7.65	5.74
Dodge.....	18,702	19,720	14,620	183,645	94,963	6.84	8.75
Pontiac.....	14,688	16,242	14,354	151,474	57,632	6.54	5.31
Oldsmobile.....	14,720	14,285	12,605	134,296	45,669	5.80	4.21
Nash.....	7,710	8,201	7,231	78,126	55,883	3.38	5.15
Hudson.....	6,990	8,672	8,578	74,758	48,851	3.23	4.50
Mercury.....	5,599	6,881	7,151	74,536	34,492	3.22	3.18
Studebaker.....	6,007	7,521	7,912	73,228	35,335	3.16	3.26
Chrysler.....	7,802	8,604	7,230	68,720	46,365	2.97	4.27
De Soto.....	6,207	6,749	5,382	52,968	39,635	2.29	3.65
Cadillac.....	4,938	4,612	3,008	39,746	11,930	1.72	1.10
Packard.....	4,449	4,331	4,399	33,790	21,147	1.46	1.95
Kaiser.....	5,178	5,602	3	33,530	5	1.45	.....
Frazer.....	5,333	5,571	4	32,023	5	1.38	.....
Willis.....	1,803	2,025	22	17,428	22	.75	.....
Lincoln.....	1,345	1,564	1,242	17,401	5,924	.75	.55
Crosley.....	1,487	1,387	419	11,658	648	.50	.06
All Others.....	87	88	69	638	367	.03	.04
Total.....	251,655	264,666	219,281	2,314,606	1,084,857	100.00	100.00

* Data from R. L. Polk & Co.

Repair Volume for 1948 Will Reach All-time High

When gaging business volume for the coming year it is important to remember that car registrations for the current year will reach the tremendous total of 37,000,000 vehicles. This exceeds the previous record of 34.4 million made in 1941 by 2.6 million. Not only are there more vehicles—cars and trucks—on the road than ever before, but over one-third of them, about 12 million, are 10 years of age and over. Only 6 per cent are less than five years old, while 59 per cent are five to nine years old. In other words, the great majority of today's cars and trucks are of such

age as to require major repairs. Furthermore, gasoline sales are up 8 per cent over last year, indicating that there is no slackening in the car owner's desire to go places sitting down. These points should be remembered when planning for next year's business.

1947 Auto Production Among the Biggest Years

Uninformed opinion to the contrary, 1947 will go down in history as being the third largest year from the standpoint of automotive production. Only in 1929 and 1937 were more cars produced. With no labor troubles, the coming year should break all records.

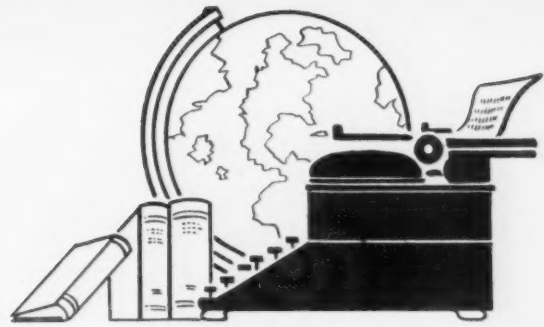
ICC Will Probably Permit Dual Saddle-mounts

The Interstate Commerce Commission will probably permit the use of dual saddle-mounts in driveway operations as a result of testimony presented at hearings which were concluded on November 18. For the Commission to follow any other course would mean that the record was being completely overlooked, for there was no disagreement as to the safety of such methods. In fact, the ICC's own safety experts are convinced that such operations are entirely safe if properly handled.

It is also likely that the Commission will approve the transportation of used cars by means of tow-bars, so long as some mechanism is used to steer the towed vehicle. There will probably be some limitation as to the age of the vehicle which may be towed in such a manner.

More Steel Scheduled for Industry Use in 1948

The automotive industry will get a bigger percentage of their steel requirements in 1948 than they did this year, according to Ernest T. Weir, chairman of National Steel Corporation. He revealed that the company's Great Lakes unit will greatly increase its cold rolled sheet capacity early next year. He said that when the current operation is completed, Great Lakes will supply 1.5 million tons annually or about 27½ per cent of the national sheet steel supply. Currently the com-



pany has a capacity of 700,000 tons a year. Practically all Great Lakes sheet goes to the automotive industry.

USBM Advocates Synthetic Liquid Fuel Industry

Present fuel shortages are reflected in an announcement by the U. S. Bureau of Mines, that a synthetic liquid fuel industry should be established in this Country. Europe has augmented its gasoline supply for years by the means of alcohol and alcohol blends are frequently used by American race drivers. The same recommendation has been made several times in the past, generally by agricultural interests, but never has it had the backing of a fuel shortage. Huge amounts of steel would be required to build the plants having the necessary capacity of up to 2 million barrels a day. The steel requirements and the necessary research will undoubtedly prevent the early adoption of any such plan.

Reuther Wins One Battle But Will Meet All Comers

With Walter Reuther in full control of the Auto Union, many observers believe that all will be quiet on the labor front. That, however, is wishful thinking. While Reuther has cleaned out top flight opposition, there are many strong minority groups that will continue to fight him tooth and nail. In addition, it must be remembered that while Reuther opposed the Com-

munist elements in his union, he has always vigorously opposed incentive pay systems, cost sharing plans and speed-up in all its alleged forms. Realists are of the opinion that strikes, slow downs and other forms of union opposition, will continue with unabated frequency.

Laudable Attempt to Halt Texas Ceiling Price Move

The action of the Texas Used Car Dealers Association in condemning any attempt to reinstitute price ceilings on cars, is to be applauded. The present situation with current models selling at higher prices on the used car lots than in the new car showrooms is indeed unusual. But it is a condition that always exists when demand exceeds supply. That is true regardless of the commodity and it applies equally to automobile, clothing, food and real estate. The primary effect of price ceilings is to force most transactions under cover, where dishonest practices can more easily flourish.

With the flagrant disregard of OPA still fresh in our memories, the statement that the present situation is an outgrowth of the removal of price controls, is ridiculous. As long as the supply is short, the public will be willing to pay a premium for its cars. Certainly no one is going to sell to the lowest bidder.

The one to blame for the current situation is the individual car owner who purchases a new car and then resells it.

Rumor Has 1949 as Year Of Model Changeover

Before the lacquer has really become dry on the first 1948 jobs, rumors are already circulating the industry on the 1949 models. No details are available but the consensus is that most manufacturers will bring out their 1949 models early in the Fall of the coming year. For the most part, major changes will be the order as current series are basically 1941 models. Undoubtedly many of the manufacturers are of the belief that by next Fall production will have caught up with, or at least be within shouting distance of, demand and the market will be ready for the stimulus of major body and mechanical changes.

1947 Factory Sales from U. S. Motor Vehicle Plants*

PASSENGER CARS	
August	261,158
September	307,942
October	315,969
Total—Ten months	2,886,091
TRUCKS AND BUSES	
August	88,251
September	112,328
October	120,032
Total—Ten months	1,047,428
TOTAL MOTOR VEHICLES	
August	349,409
September	420,270
October	436,001
Total—Ten months	3,933,519
Weekly Motor Vehicle Production U. S. and Canada**	
November 8.....	101,051
November 15.....	110,663
November 22.....	115,197
November 29.....	82,932
* Automobile Manufacturers Association.	
** Ward's Automotive Reports.	



The Commodore Club Coupe. Available in Six or Eight, its over-all height is five feet.

The 1948 HUDSON

Hudson's entire range of new models makes a clean break from current line, with unit body-chassis and a new engine in the Six.

THE new Hudson is radically different in design and construction from the current models and is available either as an Eight or as a Six of increased power and displacement. Both models use the same body and chassis, which are incorporated in what Hudson calls "Monobilt" construction, the body and chassis being a single, welded unit with an over-all height of only 5 ft. The low roof level is achieved by dropping the floor to the level of the lower edge of the integral side rails. At the same time the engine has been moved forward over the front suspension assembly and the rear seat has been moved completely ahead of the rear wheel housing. The total result is a very low silhouette.

In addition to the body-chassis construction, the most noteworthy changes in the Hudsons are the use of hypoid rear axles and a new 6-cylinder engine which has the largest displacement and the highest horsepower in the American 6-cylinder field. The 8-cylinder engine is continued unchanged.

The Super-Six engine, rated at 121 hp., has full-

pressure lubrication with rifle-drilled connecting rods and pressure-fed, mushroom type tappets. The oil system is protected by a Floto-type screen at the suction end of the pump which is now of the conventional rotary type.

The crankshaft has four bearings, all of the screw-in type, and the rod bearings have interchangeable shell halves. The camshaft, which is phosphate-treated to increase its service life, is driven by a Morse silent chain instead of gears as heretofore.

Hudson continues the use of a dual downdraft carburetor with a single float. A thermostatically controlled carburetor heater uses exhaust gases to heat the intake manifold.

Both the Super-Six and the Eight have a standard compression ratio of 6.5 to 1 and an optional ratio of 7 to 1, the latter requiring an optional aluminum cylinder head with special gasket. Both engines have pistons of aluminum alloy of the T-slot type, cam ground, with two oil and two compression rings, pinned and tin-plated. Three rings are above the piston pin, one on the skirt.

The coil is now on the block, close to the distributor to prevent interference with television reception.

Because of the forward location of the powerplant, the propeller shaft drive is in two sections, with two balanced shafts and three universal joints in the train, the latter having needle bearings and lubrication fittings. The mid-chassis propeller line sealed ball bearing is mounted on a cross member at the rear end of the front shaft and is insulated from the frame by a rubber mounting. The well-known Hudson balanced, single wet plate clutch with cork inserts is continued. Hypoid rear axles are standard equipment for the first time, with a standard ratio of 4.1 to 1; and an optional ratio of 4.55 to 1.

Of interest from the maintenance standpoint is the provision for removing the pan, a special problem with unit body-chassis construction and the location of the engine over the front cross member. Hudson,

(Continued on page 72)

Industry Studies General Motors Parts Distribution Plan

by **BILL TOBOLDT**

WITH the entire industry — manufacturer, wholesaler, independent shop and car dealer — studying the new General Motors parts distribution plan in an endeavor to ascertain its effects, only one consequence seems definite and sure and that is, that automotive after-market jobbers are suddenly confronted with some 13,200 additional parts wholesalers.

Beyond that one point, the discussions become sheer conjecture, with many of the more conservative wholesalers taking a "let's wait and see" attitude while the more volatile jobbers are declaring vehemently that they will drop all GM and United Motor parts lines which they are now carrying. All, however, are looking forward to the ASI Show to see how the associations will plan to handle the situation at their meeting there.

Undoubtedly the effectiveness of the GM parts plan will vary in different localities and also with the make of car. Jobbers close to a dealership operated by an aggressive parts minded business man will most certainly have their work cut out for them, particularly if the dealer handles Chevrolet or one of the other high production makes.

Certainly Chrysler with its Mopar plan and Ford with its parts trucks have taken a sizable slice of the total parts business in the past and jobbers are using their experience competing with Ford and Chrysler as a gage for measuring the effect of the new GM competition. But it is equally true that many wholesalers have enjoyed a high degree of prosperity even during periods of relatively poor business. And that same situation will continue regardless of how many establishments are competing for business. It is undoubtedly platitudinous to point out that the wholesaler who does the most aggressive selling job, provides the best service and turns out work of high precision from his machine shop, has little to fear from any competition, regardless of its source.

Discussing the situation with GM dealers indicate that the larger ones are looking forward to greater volume and increased profits as a result of the new

**Auto jobbers' competition stiffened
by 13,200 car dealers as General
Motors reaches for a bigger slice
of the lucrative parts business of
51,000 independent repair shops**

plan. Some of the dealers with a small franchise are more reticent in giving whole-hearted endorsement to the new GM development. They claim that they will be competing with larger GM dealers for the parts business of the independents and for example, point to the smaller Ford dealers, who they claim, are having difficulty selling their share of parts because the larger Ford dealer has already covered the territory with his trucks. Regardless of whether the smaller Ford dealer likes the company parts sales policy, it does sell parts, and it is successful because of the service it renders by bringing the parts directly to the shop which requires them.

GM dealers with larger franchises view the plan with enthusiasm, pointing out that they can now compete on a more even basis with wholesalers for the Nation's replacement parts business.

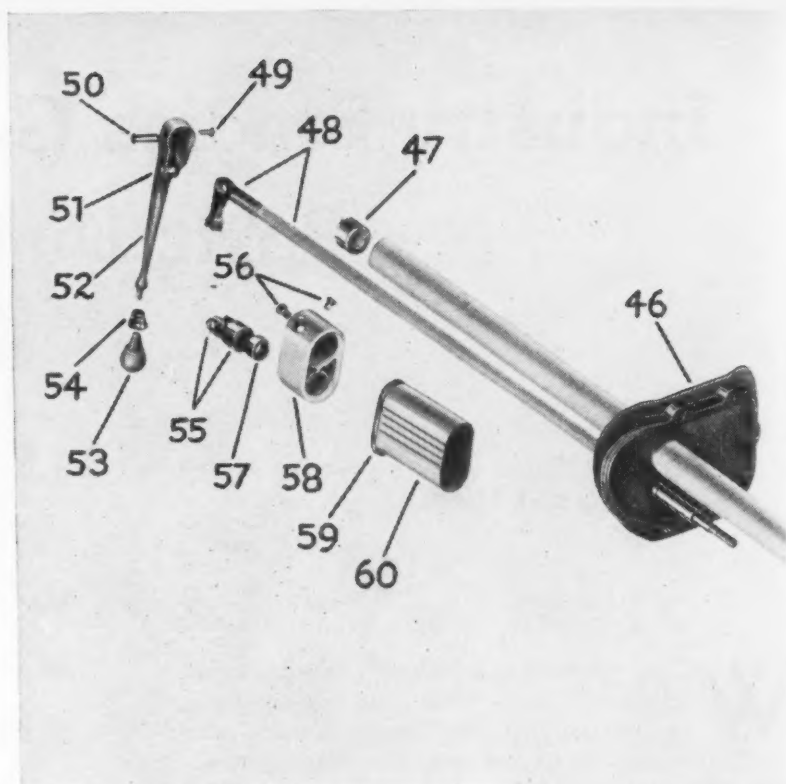
Independent parts manufacturers' reactions to the GM plan range from distinct alarm to complete indifference. Many of them, along with wholesalers, will thrash out the situation at their Association meetings at the ASI Show. In particular, they are scanning recently issued GM parts lists, and although they describe the various net prices as competitive, they declare there is no probability of starting a price war.

Such manufacturers also declare that in most lines their discounts to wholesalers and in turn those offered to the trade, are greater and offer a higher percentage of profit than is the case with the GM dealer.

The independent repair shop, as one of the owners remarked, will "buy from jobber or dealer whoever gives the best service and the longest discount."

Factory-tested disassembly and assembly procedure for the steering systems on cars of the Chrysler line—Dodge, Plymouth, De Soto and Chrysler

by **RICHARD L. REDDY**



Servicing

Chrysler Steering

INTENSIVE publicity has made most drivers conscious of the value of correct wheel alignment. Steering adjustment, however, although it can and should be sold along with an aligning job, has been relatively neglected, despite the worth-while revenue that it can yield. Nor is the job a difficult one, even though a complete overhaul may prove necessary before the job is done if a completely safe system is to be turned out.

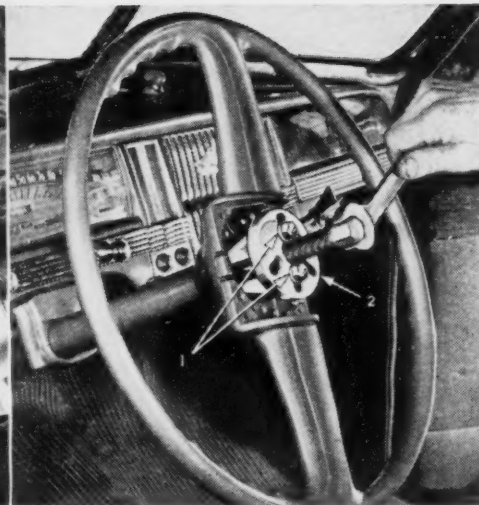
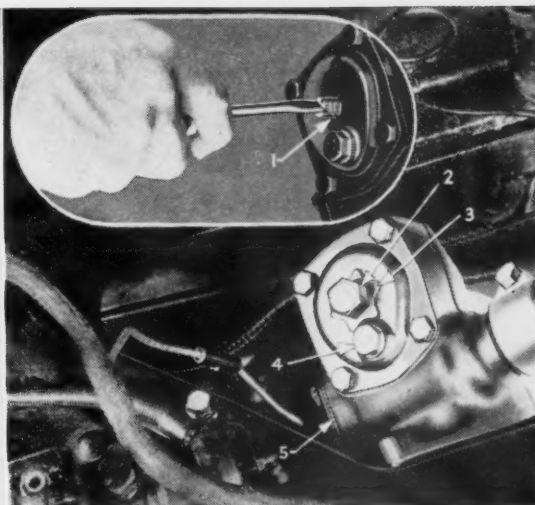
Let's take the Chrysler line . . . Chrysler, DeSoto, Dodge, Plymouth . . . for example. The steering system is similar on all these cars, and adjustment and repair can be made in a relatively short time.

Chrysler steering can be adjusted for end-play of worm shaft bearings, end-play of steering arm shaft and mesh of roller tooth with steering worm. All adjustments may be made while the steering gear is assembled in the car. Chilton Flat Rate time on this job is approximately 2½ hours.

End play of the worm shaft bear-

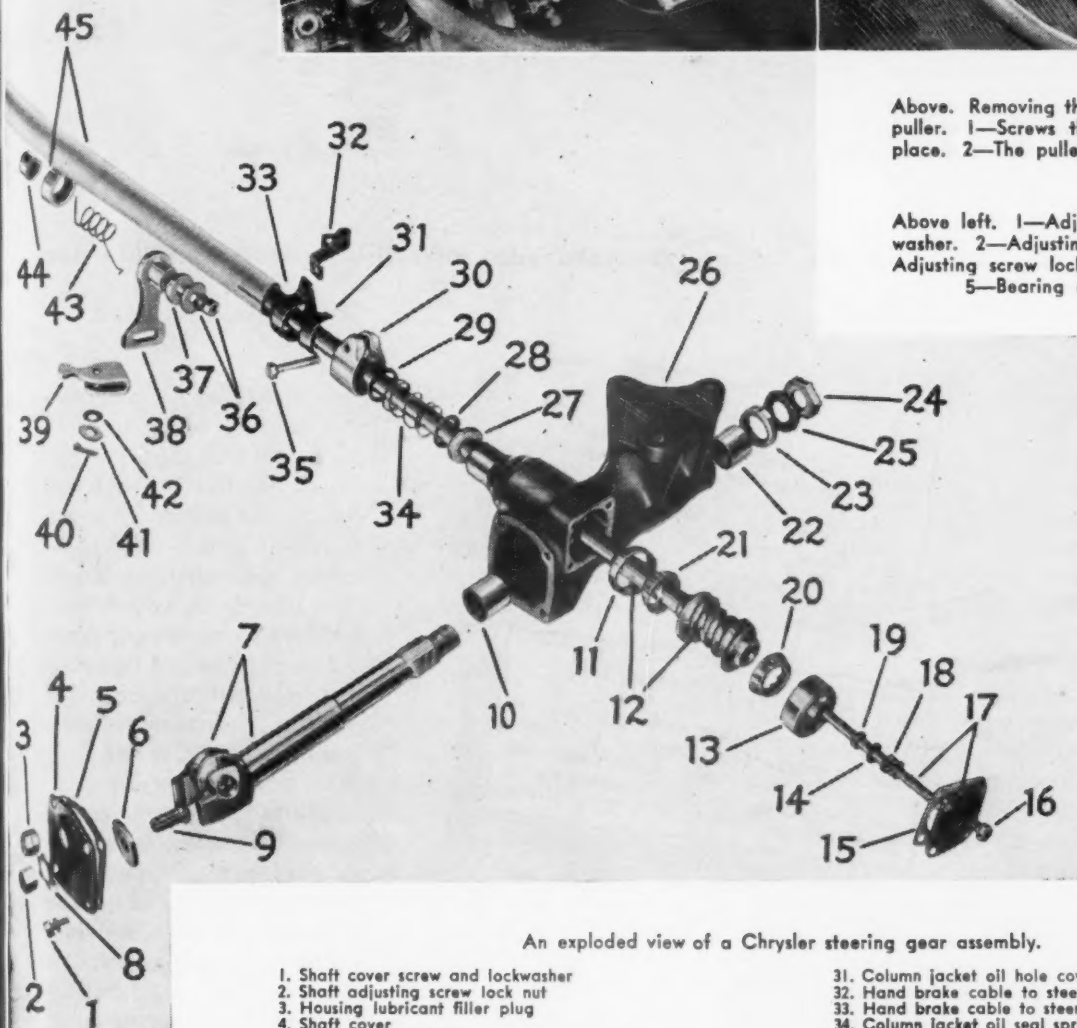
ings should be adjusted first. This can be checked, without jacking up the car, by holding one finger lightly against the tube where it meets the steering wheel hub. If there is end-play in the worm bearings, the steering wheel will be felt to rise and fall on the tube as it is turned from left to right and back again.

If any end-play is found, the left engine splash pan should be removed and the horn wire disconnected at the bottom of the steering column. The cap screws which hold the grease retainer cover and tube at the bottom of the steering gear body are removed. Between this steering gear body (steering box) and cover will be found a number of .005 in. and .010 in. shims. Enough of these shims should be removed to eliminate the end play in the worm, but not enough to cause binding when the cover is secured tightly in place. As a final check, the steering wheel should be turned slowly from full left to full right and back again. If any stiffness exists, too many shims have been removed or the steering assembly is out of alignment at some point. Misalignment of the steering gear is sometimes caused by shifting of the body, due to loosened bolts. If (Continued on page 78)



Above. Removing the steering wheel with a puller. 1—Screws that hold the puller in place. 2—The puller, as used by Chrysler.

Above left. 1—Adjusting screw and thrust washer. 2—Adjusting screw lock nut. 3—Adjusting screw lock plate. 4—Filler plug. 5—Bearing adjusting shims.



An exploded view of a Chrysler steering gear assembly.

1. Shaft cover screw and lockwasher
2. Shaft adjusting screw lock nut
3. Housing lubricant filler plug
4. Shaft cover
5. Shaft cover gasket
6. Shaft thrust washer
7. Shaft and roller tooth assembly
8. Shaft adjusting screw lock plate
9. Shaft adjusting screw
10. Shaft bushing—upper
11. Worm thrust bearing cup—upper
12. Steering tube and worm assembly
13. Worm thrust bearing cup—lower
14. Steering tube oil seal washer
15. Housing cover shims (worm adjusting shims)
16. Housing cover screw and lockwasher
17. Housing cover and grease retaining tube assembly
18. Steering tube oil seal spring
19. Steering tube oil seal
20. Worm thrust bearing cage and rollers
21. Worm thrust bearing cage and rollers
22. Shaft bushing—lower
23. Shaft oil seal
24. Arm nut
25. Arm nut lockwasher
26. Housing
27. Column jacket oil seal
28. Column jacket oil seal washer
29. Column jacket oil seal spring washer
30. Column jacket clamp
31. Column jacket oil hole cover
32. Hand brake cable to steering post cable clip
33. Hand brake cable to steering post clip
34. Column jacket oil seal spring
35. Column jacket clamp bolt
36. Remote control gearshift rod end nut and lockwasher
37. Remote control gearshift rod end
38. Remote control gearshift rod lever
39. Column jacket selector lever
40. Column jacket selector lever stud cotter pin
41. Column jacket selector lever stud spring washer
42. Column jacket selector lever stud plain washer
43. Remote control gearshift rod return spring
44. Remote control gearshift rod bearing
45. Column jacket assembly
46. Steering post hole cover pad
47. Column jacket bushing
48. Remote control gearshift rod
49. Remote control gearshift lever bearing screw
50. Remote control gearshift lever bearing
51. Remote control gearshift lever pin
52. Remote control gearshift lever
53. Remote control gearshift lever knob
54. Remote control gearshift lever knob ferrule
55. Remote control gearshift lever pivot and rod bearing
56. Remote control gearshift lever pivot bracket screws
57. Remote control gearshift lever pivot bracket bushing
58. Remote control gearshift lever pivot bracket
59. Column jacket casing head
60. Column jacket casing

RESORTS

Your vacation will be much more pleasant this year if you don't have any car worries. Before you start out this year drop in at the Jones Motor Service, 511 main street, for a complete motor checkup.

INSURANCE

We Don't sell life or fire insurance, but we do sell insurance that your car will keep running for years to come. Drop in for complete motor checkup at the Jones Motor Service, 511 Main street.

SPORTING GOODS

It's fun to go fishing, but it's more fun when you know you won't have car trouble. Before that next fishing or hunting trip drop in and get a complete motor checkup at Jones Motor Service, 511 Main Street.

Classified Ads Have Pull

by DAN VALENTINE

Your advertising dollars pay off in the large ads—make your advertising pennies produce too

RECENT surveys by newspaper reader interest research agencies reveal that the classified ad pages in the nation's newspapers rank right next to the comics and sports pages in reader interest. Yet many operators of repair shops and dealer agencies are failing to take advantage of this potential advertising gold mine.

Repairmen, by planning a careful program of classified ads, can cash in on this reader interest and supplement their regular display-type ads at very little cost.

There are many advantages of inaugurating a small advertising program in the classified pages of your local newspapers. In the first place, the cost is nominal. For just a few pennies, a sound selling message can be brought to the reading public. Second, classified ads are flexible. There is no limit to the variations which can be worked out in the copy of the economical little ads. A good classified ad depends on brevity. Usually, the shorter the ad, the greater the selling punch.

Another advantage of using the classified pages is that the small ads can be written in an informal vein. You can gain an informality in the copy that is hard to capture in the larger ads.

The greatest advantage in making use of the classified pages in your advertising budget, however, is

USED CARS

Some day you'll probably want to sell your car. Be sure of getting the top price by keeping it in top condition. Bring it to the Jones Motor Service, 511 Main street, for periodic motor checkups.

NEW AUTOMOBILES

Indications are that new automobiles will be scarce for sometime to come. Meanwhile, don't take chances on your old car. Drop in for a checkup at Jones Motor Service, 511 Main street.

for insurance — insurance for the big ads.

A few well chosen words in a classified ad can call the reader's attention to the large display advertisement in another section of the paper. A two-line ad — "Be sure to see our large ad on page two of tonight's paper" — will produce added readers — and more business. Moreover, it will only cost a few cents.

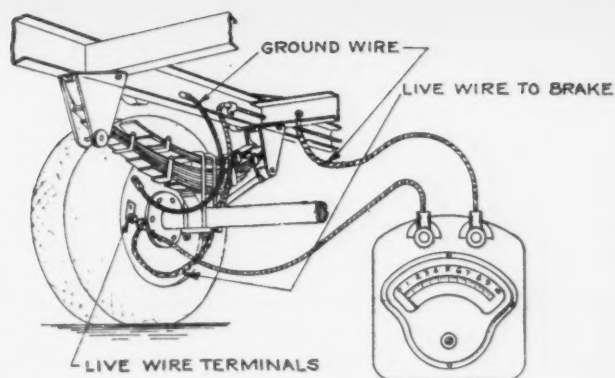
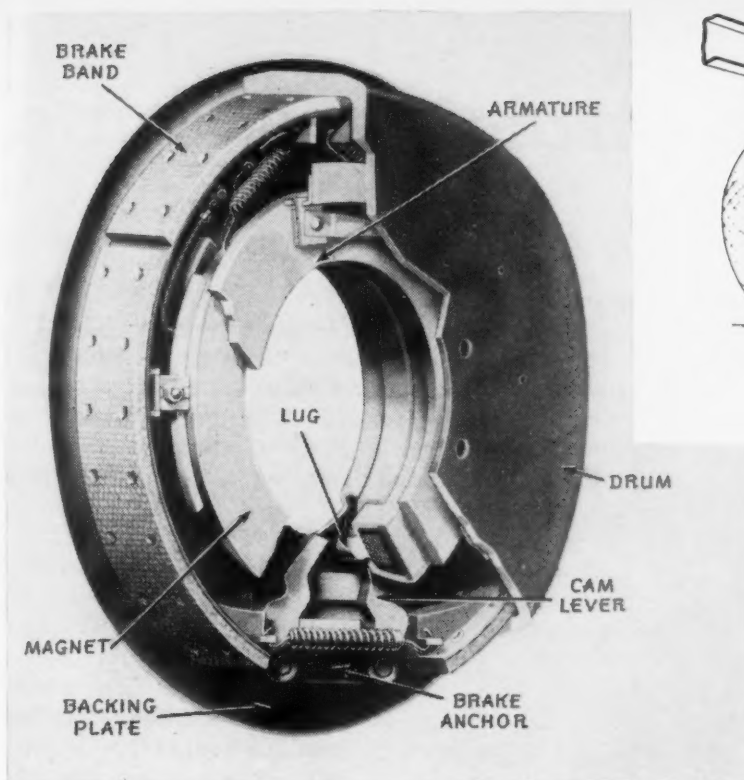
If a repair shop or agency has a catchy slogan or trademark, so much the better. The slogan can be scattered all over the classified pages for a few dol-

lars and catch every class of buyer. This is especially adaptable and beneficial for auto repair advertising because everyone—at one time or another—needs car repair work. Fit your small classified ads under every conceivable classification on the classified pages—used automobiles, garages, sporting goods, new homes, cottages, as shown by the examples.

At first glance it might not seem possible to write an auto repair ad to fit under the above classifications, but it can be done.

There is practically no limit to the variations that can be worked up in these small classified ads. By constant use, they can become a byword for your garage.

Here's another thing to remember: In the other
(Continued on page 84)



Above: Where a voltmeter is used to check the wiring of the system it should be attached in this manner.

Left: A cutaway view of the brake, showing the working parts of the wheel unit, including the actuating magnet.

Tested procedures for checking, adjusting and servicing Warner truck and trailer installations

Servicing

Warner Electric Brakes

THE Warner Electric Brake is basically a mechanical brake that is actuated by an electro-magnet.

Its essential parts are a pedal or lever-operated controller which functions like a rheostat, controlling the flow of current from the battery to the electro-magnet; the armature disc, a circular steel disc bolted to and revolving with the drum; the electro-magnet, matching, in size and shape, the armature disc against which it is lightly pressed by springs. This electro-magnet is mounted on the backing plate but is free to rotate within a limited arc.

When the driver applies the brakes, current flows into the electro-magnet, energizing it and causing it to cling to the armature disc. Since the magnet is free to rotate within a limited arc, it attempts to rotate with the armature disc. This rotation brings a lug on the magnet in contact with the cam lever which, in turn, forces the band against the drum, stopping the wheel. (On the 9, 12 and 14 in. brakes no cam lever is used, the magnet lug pressing directly on the end of the shoe.)

Braking is controlled by the amount of current the driver feeds to the electro-magnet. As this current is increased, the magnet clings more tightly to the armature disc, causing the magnet lug to contact the shoe,

thereby applying the brakes within a shorter time.

Maintenance of these brakes, as far as the braking surfaces themselves are concerned, is the same as for any brake. The electrical system, however, should be serviced according to an approved procedure if complications are to be avoided.

The first check should be directed at the wiring and ground connections, fuse box, and lights on both tractor and trailer. The battery (or batteries) must be checked and the safety switch and chain connections examined.

Before the controller can be tested, the wheel electro-magnets should be tested for current draw. This is done by connecting a low reading ammeter in series with each magnet in turn. *The controller is turned full "on."* The ammeter reading obtained should then conform to that given in the following table:

Brake Size	Minimum Amps	Maximum Amps
9 x 1 3/4 in.	2.6	3.4
12 x 1 3/4 in.	2.5	3
14 x 2 in.	2.8	3.7
16 x 2 1/2 in.	2.8	3.7
17 1/4 x 3 in.	2.6	3.4
17 1/4 x 4 in.	2.6	3.4
17 1/4 x 5 in.	3	4.2

(Continued on page 86)

Pop Straightens Out a

LARRY was scowling when he entered the shop. Daring the lightning, Tommy greeted him with a cheerful "Good morning," but Larry merely glared at him and kept on toward the washroom.

"After this," said Tommy when Larry reappeared, "I'm not going to waste time speaking to you in the morning."

"Suits me," said Larry.

"What's the matter? Did your wife catch you sneaking in late again last night?"

"None of your business," said Larry, "but I'll tell you. I been double-crossed."

"Nobody acts that way just before Christmas."

Larry snorted. "You don't know my wife," he said.

"Your wife?" echoed Tommy.

"Yeah. And all I was doin' was trying to hint a little about what I'd like for Christmas."

From Tommy's frown, it was evident Larry was not making himself clear.

"I figured as long as the wife wouldn't let me spend the sixty bucks for that new castin' rod I wanted," Larry explained, "maybe I could persuade her to give it to me. So last night, before we take Junior down to see Santy Claus, I take the kid aside. 'And when you get through tellin' old whiskers what you want for yourself,' I says 'you ask him won't he please bring your daddy a new Super-Swish castin' rod.'"

"So we get down to the store and the kid does just like I told him. 'And please bring Daddy a Super-Swish castin' rod,' he says. I look at the wife to see how she's takin' it, but the kid ain't through. 'And then,' he says, 'will you please bring Mommy a new fur coat?' The wife is grinnin' at me like a Cheshire cat."

"When we get home, she says to me, 'You'll just have to give me the coat now. You don't want Junior to lose his faith in Santy Claus, do you?'"

Tommy was laughing.

"Get all your laughin' done while you can," said Larry. "You'll be married yourself some day." He

glanced toward the shopdoor. "In the meantime," he added, "go see what that customer wants."

The man standing beside the eight-cylinder Ford four-door was small, middle-aged and mild-mannered.

"When I stopped for gas outside town," he said, "the man at the pump told me oil was leaking out of the timing-case cover and that I'd better get it fixed right away. Can you do it?"

"Sure," said Tommy.

"But can you do it right away? I'm in a terrible hurry. I'm taking my wife to Harrisburg to a woman's club meeting. If we're late, she'll be furious."

"Just a minute. I'll see."

Returning to the bench, Tommy hesitated before speaking to Larry. "I don't suppose there's any use asking if we could do a rush job," he said at last.

"Why not?" snapped Larry.

"You don't seem to be in a very obliging mood."

"What's the job?"

Tommy told him and then added, "How long will it take?"

Larry squeezed his chin, the way he always did when he wanted to give the impression of thinking. "I'll figure it," he said, and went to the shop office. He was gone only a couple of minutes. "Tell him it'll take an hour," he said when he returned.

The customer seemed pleased when Tommy relayed Larry's message. "I'll be back promptly," he said, then obediently followed his towering wife from the shop.

Tommy drove the Ford over to a bench. "I guess I'm hooked for this job," he said to Larry as he climbed out.

"Looks that way," replied Larry with a shrug.

Tommy worked doggedly but the work went slowly. It seemed to him he had barely started when Larry walked past and asked, "Ain't you got that job buttoned up yet?"

"No. I haven't even got it down."

"Well," said Larry, "you've got just three more minutes."

"I can't help it. I've been working as hard as I can." Larry grinned crookedly. "It's okay by me," he said.



MOTOR AGE

BASIC COURSE FOR

MECHANICAL TRAINING

**Larry messed up this job without
ever touching a wrench because
he hadn't taken time to read
the full directions on page Eight**

Two-time Job

"Only you'll have to do the explainin' when that pint-sized guy comes back lookin' for his car."

A few minutes later Tommy looked up to see the customer and his wife standing by the shop door. He glanced at Larry but the latter looked away. Tommy wiped his hands and went over to the door.

"You're not still working on my car?" asked the customer.

"I'm afraid I am," said Tommy. "It took a little longer than we figured. You see—"He happened to let his eyes wander toward the office and his voice failed him. Pop O'Neill was standing in the doorway. Tommy moistened his lips and tried to speak again, but the big woman thrust her husband behind her.

"I demand to see the proprietor," she said.

"Right here," announced Pop, strolling out into the shop.

"This boy," said the woman with disparaging emphasis, "promised us our car in an hour. The time is up and we demand our car."

Pop smiled. "Won't you step into the office," he said.

"It's much more comfortable. I'll see what the trouble is."

The woman hesitated a moment but finally let Pop lead both her and her husband into the office. When Pop had them safely seated, he returned to the shop.

"Now," he said to Tommy, "what's this all about?"

"There was an oil leak in his timing-case coverseal, said Tommy, "and we told him we could fix it in an hour. We just weren't able to do it."

"Where'd you get the idea you could do a job like that so fast?"

"I asked Larry."

"Oh," said Pop. He started toward Larry, and Tommy was sure he would set off the fireworks, but Pop was unusually tranquil.

"Give the kid a hand on that Ford," he said, "and



Pop went straight to Larry's bench. "Now that that she wolf is out of the way," he said, "how about tellin' me why you got the kid in a jam."

by J. EDWARD FORD

let's get that Amazon and her little man out of here."

"Okay," growled Larry.

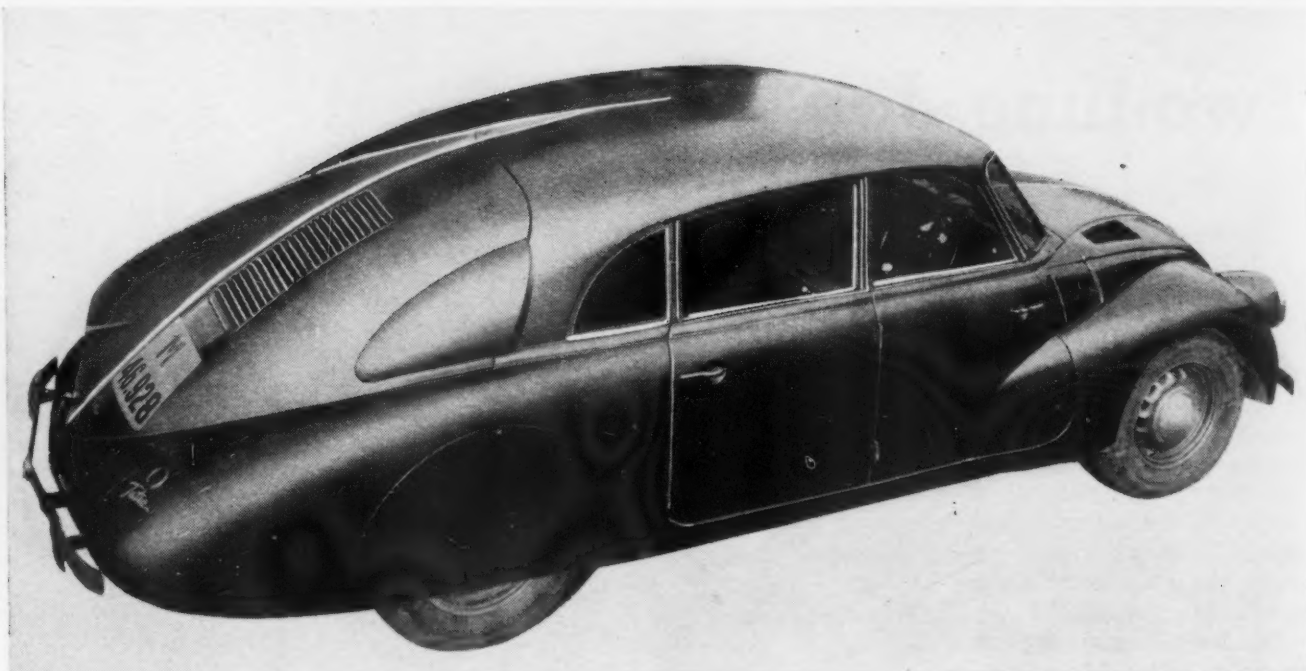
When the car was ready, Pop announced the fact not to the customer but to his wife. "I hope we haven't seriously delayed you," he said. "If I miss my club meeting," said the woman, "you'll hear from me."

"Surely," said Pop, with his most ingratiating smile, "they wouldn't start the meeting until the president got there."

The woman simpered. "I'm not exactly president," she said, "but I am chairman of the committee on protecting useful insects."

Pop unconsciously glanced at her husband, and the latter flushed.

As soon as they had gone, Pop went straight to
(Continued on page 94)



The Czechoslovakian Tatra V-8, one of Europe's best known rear-engine cars. The air intake ports are just above the rear wheels.

What's Ahead with **ENGINES**

THE Tucker '48's rear engine design has stirred up a lot of interest

in just where the engine should be located . . . in the front or in the rear. Of course any arm-chair engineer or Sunday supplement writer will assure you that the car of the future is bound to have its powerplant in the rear. Is it really that simple, however? Are there any real advantages to be had from taking the engine out of the hood and sticking it in the trunk?

Car buyers have never really decided just what they like to find when they open the hood . . . an engine or a spare tire. Apparently the designers have had their doubts, too, for this dispute is as old as the industry.

Back in the early days, when automobiles were so close to the buggy that they still had whip sockets on the dash, the whole issue was ducked by hanging the engine under the seat, where it served not only for power (of a sort) but for under-seat heating as well. However, as engines got bigger, and as more and more drivers complained that their spines were getting peined from engine vibration, designers began to look around for a new location for their two or three cylinders. Finally, partly because they wanted to preserve the traditional lines (and partly because the narrow space between the front wheels seemed to be

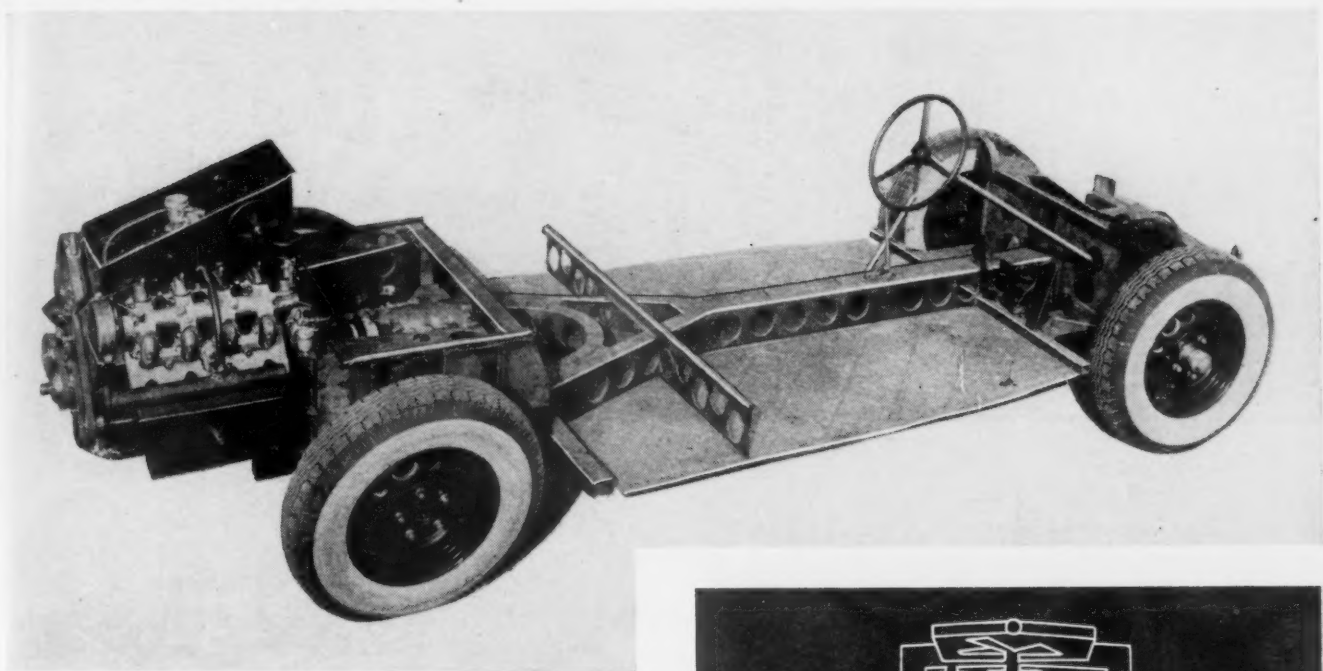
by **RICHARD L. REDDY**

the best possible place) they settled on the front end as the right spot for the engine. In that position,

by and large, it has remained ever since, inching forward in the past few years, until it now rests well over the front axle.

Not that interest in the position of the engine ever flagged; far from it. There was even a rig called the Adams-Farwell, away back when, that had a rotary engine (the crankshaft was stationary and the case and cylinders revolved on this one) right over the differential. Then, to confuse the issue, the Wolseley people, in England, put the engine amidships, mounted the car on two tandem wheels, and kept the whole thing more or less upright by means of a gyroscope. Later on, in more modern times, a number of foreign manufacturers, such as Trojan, Tatra and Renault, undertook large-scale production of rear-engine cars. Many of these machines are still in production and others, such as the Isotta-Fraschini are about to appear. As mentioned before, Tucker has really revived interest in this country, although there has been speculation about Ford's plans in this direction ever since Bill Stout began to experiment with the perennial Scarab some years ago.

It appears, then, that interest in the rear engine car has never really died down, that it remains an



The Tatra chassis. Note that the pedals must be placed *behind* the rear limit of the front tires or the riders' feet will be cut off.

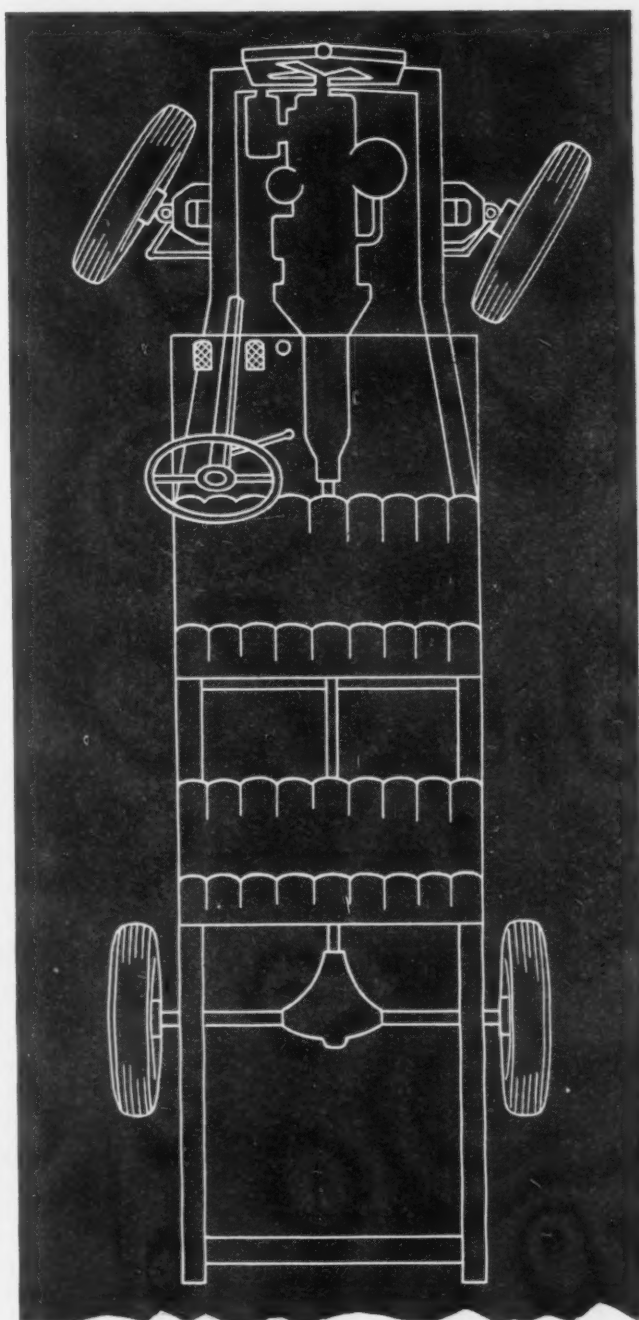
BEHIND ?

object of serious study for engineers of many countries. What, however, are its advantages? Better weight distribution? Better visibility? Freedom from engine noise, heat and odors? Increased safety?


In regard to distribution of weight, there seems to be very little evidence that favors the rear engine car. The absence of the concentrated weight of the engine over the front end gives the r-e job steering characteristics of its own. Anyone who has driven one was well aware, at the time, of the rather light feeling of the steering, especially when driving without passengers in the front seat and without a fair amount of baggage in the forward trunk. This effect, that has made rear engine layouts generally unsatisfactory for racing, can, no doubt, be corrected by modified springing and steering. Theoretically, it could be easily overcome by moving the passengers well forward to compensate for the loss of front-end weight. There's a catch to this however, the same catch that makes the rear engine design of little value in increasing visibility to any degree.

In popular opinion (and in the opinion of many who should know better) the only solution to the visibility problem is to put the engine in the rear and
(Continued on page 90)

A standard front-engine American car. Notice that the pedals are just as far forward as on the rear-engine Tatra.



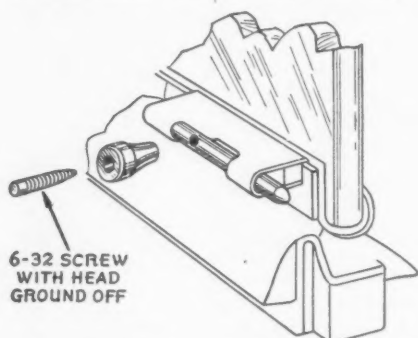
We Pay 5 Bucks For SHOP



Surer than the races, steadier than hitting the jackpot. The faster you write 'em, the richer you get. We need 'em bad if they're good. So grab your pencil and spike yourself a fin. Send along your idea—write it or draw it, anyway that we can understand it—some short cut to make a job easier or faster, some special tool you can't buy, some kink of your own. Of course, we won't accept any printed by any other publication.

Repairing the Bolt Lock Knob and Pin on GM Vents

When the bolt lock knob and pin pull out on a Fisher Body No-Draft window it usually means replacing the whole unit. It's a lot easier, however, to tap the hole with a 6-32 tap, then grind the head off a 6-32 screw to go inside the counter bore of the knob. Don't drill too deep,



as the screw should tighten in the hole when just about through the bolt.—Charles Jones, 528 W. Allen St., Springfield, Ill.

Starting Hudsons

Occasionally I have had difficulty in starting Hudsons because of a weak magnet in the starting solenoid. Here's a remedy: First, unscrew the cap; second, insert a piece of fibre, .040 in. thick, inside of the cap; third, replace the cap. So far this has cured the trouble every time.—A. A. Sherman, Jr., Sinclair Station, Silver Creek, New York.

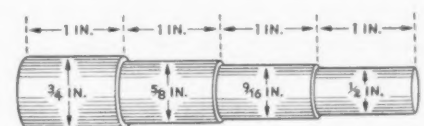
Chrome Moulding Spring Clips from Old Bearings

Spring clips to hold chrome mouldings are often hard to get. Here is a trick that I use, especially on Chrysler, DeSoto, Dodge and Plymouth running board strips. Out of my scrap pile I take a number of old rod bearings and flatten them out. I then take a hack saw and cut two grooves in the face of the bearing so as to divide it in

three equal parts. I then fold it over, along the grooves so that I have a clip of triple thickness. Through this folded clip I drill a 3/16 in. hole and insert a 3/16 x 3/4 in. carriage bolt. The assembled clip can then be slipped into the molding. These homemade clips work very well and stand up every time. — Charles A. Lewis, 643 S. Front St., Steelton, Pa.

Tool for Removing and Installing Bushings

The thin bronze bushings in the drive end of Delco Remy starters are difficult to remove and install, but this tool simplifies the opera-



tion. It will handle the 2 sizes of bushings (1/2 in. and 9/16 in.) used in General Motors cars.

Take a piece of steel 4 in. long and 3/4 in. in diameter. Chuck it in a lathe and turn it to the measurements shown in the sketch. Each of the diameters indicated, 5/8 in., 9/16 in. and 1/2 in., should be turned .005 undersize to prevent binding in the bushing or in the bore in the starter housing. The 3/4 in. diameter should be left full size. —Elmer H. Cook, Paddleford Garage, 774 Emerson St., Palo Alto, Cal.

KINKS

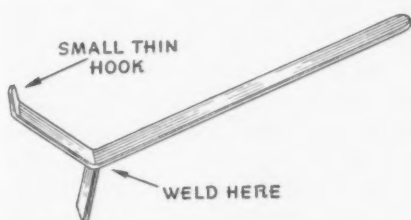
Lower Radiator Hose on Pontiacs

Here is a shop kink that I have found saves time when changing the lower radiator hose on Pontiacs, as the fender pan cannot be removed on these cars. I take a $\frac{1}{2}$ in. drill and drill a hole through the pan in line with the hose clamp bolt. Then, by using a 10 in. screwdriver, inserted through the hole, the clamp can be loosened and the hose pried off the pipe.—*Clifford Wise, Box 10, Madison, Pa.*

A Tool for Removing Hub Caps on Late Model Cars

I have made a handy, inexpensive tool for removing the hub caps on late model cars, especially those cars that have white sidewall rims.

Take a tire tool approximately 18 in. in length and flatten the end and put a small hook on it. About



6 in. back from the hook, weld a 3 in. long piece of strap metal. This part rests on the tire and the hook portion hooks under the lip of the hub cap, leaving the white-wall rim untouched.—*Ernie Reynolds, Beaverville, Ill.*

Modifying a Half-Moon Wrench for Handier Use

There are nearly inaccessible places where a "half moon" or starter manifold wrench will clear the obstructions but leaves only a finger-tip grip for the mechanic. In many of these cases this little trick will help.

Select a straight box socket the same size as the opposite end of the half moon and a nut



of the same size, preferably of the same length as the combined thickness of the two wrenches. Slip the half moon over one end of the nut and the straight box over the other end, at the desired angle. It will probably be necessary to clamp the wrenches together on the nut as shown in the sketch.—*Fred Bounds, Simon Motor Co., 514-18 Whitney St., Belvidere, Ill.*

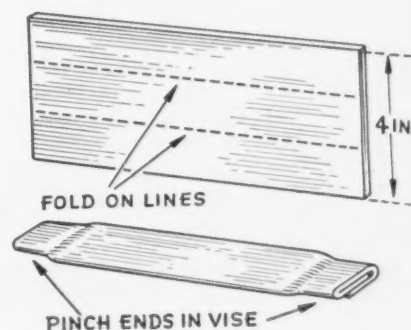
Repairing Leaks in Gas Line, Carburetor Float

We've found that nail polish makes an entirely satisfactory re-

pair for leaking carburetor floats or gas lines. It is only necessary to wipe the part perfectly clean, spread it liberally with polish and let it dry for 10 or 15 minutes. It is not affected by gas or moisture. Model airplane cement will work equally well. — *New York Subscriber.*

Improvised Fender Brace From Sheet Metal Scrap

In our shop we get quite a few fenders to repair and many of them need new braces welded in. We find



suitable scrap metal pretty hard to come by.

Now, to overcome this, we use sheet metal (an old piece of opened-up stovepipe will do) and find it very satisfactory. We cut the sheet metal into a strip, about 4 in. wide and as long as the brace to be replaced. We then fold it lengthwise three times and pinch the two ends in the vise. Braces made this way are light and strong and are very easy to weld. — *Lawrence Burns, 3025 W. Dauphin St., Phila. 32, Pa.*

Replacing Loose Knobs on Window Regulator Handles

Many customers complain because they have to purchase a complete window crank when the knob comes loose and will not stay on. This condition can be easily and permanently cured by heating alum in a ladle until liquid and pouring a few drops in the knob hole. The knob is then put in place and allowed to cool. This will hold the knob permanently.—*A. R. Robinson, 115 Grant St., Turtle Creek, Pa.*

Customer's Name	Address	Phone	Job No.
Type car	Model	Year	Date order
Work began	Work completed	Delivery to customer	

[The following section contains several lines of extremely faint, illegible text.]

Labor cost

Kind of material	Quantity	Supplier Cost	Worker	Hrs.	Rate	Amount
Total cost materials			Total hours			
			Total labor cost			

JOB COST SUMMARY

Estimated costs

Materials-----	Materials-----
Labor-----	Labor-----
Overhead-----	*Overhead-----
Over-all cost-----	Over-all cost-----
Profit or loss-----	Profit or loss-----
Selling price-----	Selling price-----

*Figured as a percentage of sales, percentage of cost or by the labor-hour method, the percentages or labor-hour cost arrived at by computing these figures based on results for a prior period.

A typical job costing form which records for the shop owner all necessary costing data for most automobile repair shop use.

merely recorded income and outgo, he would never know how much it cost to turn out each completed unit although he could tell at the end of a period whether he made or lost money. This information is of no value in cost work, however, because a management does not know where the loss or gain occurred, whether certain work was turned out at a profit and other work at a loss. The profit or loss per product or job is not disclosed by the financial accounts entered in journals and ledgers because these entries cover general income and outgo and are not arranged to give job costing information to the shop manager.

On straight merchandising sales a merchant does not need the kind of cost records essential to those who sell labor in addition to a product. A merchant's accounting routine is less complex because he figures overhead as a flat percentage on all merchandise. He does not need to cost each transaction for labor, materials and overhead. Neither need he estimate on a sale because he can depend to a much greater extent on his ordinary financial accounts.

One requisite to cost accounting is proper costing forms, which differ from financial accounting forms in that each job is costed as a unit, using single-entry instead of double-entry routine, the figures not carried forward from job to job or period to period as is common on financial accounts.

Costing labor and materials is not difficult. Mathematically, it is a simple calculation. You know what you pay for materials, so you

charge what you use on a job. Labor time is another simple calculation. You know what you pay for labor used on a job. Charge the hours worked on that job when costing it. The payroll record or time clock card suffices for the financial accounts, but it is not enough for accurate costing. To determine most easily how much the customer should pay you for the hours your workers worked on his car, you should enter this time on special forms.

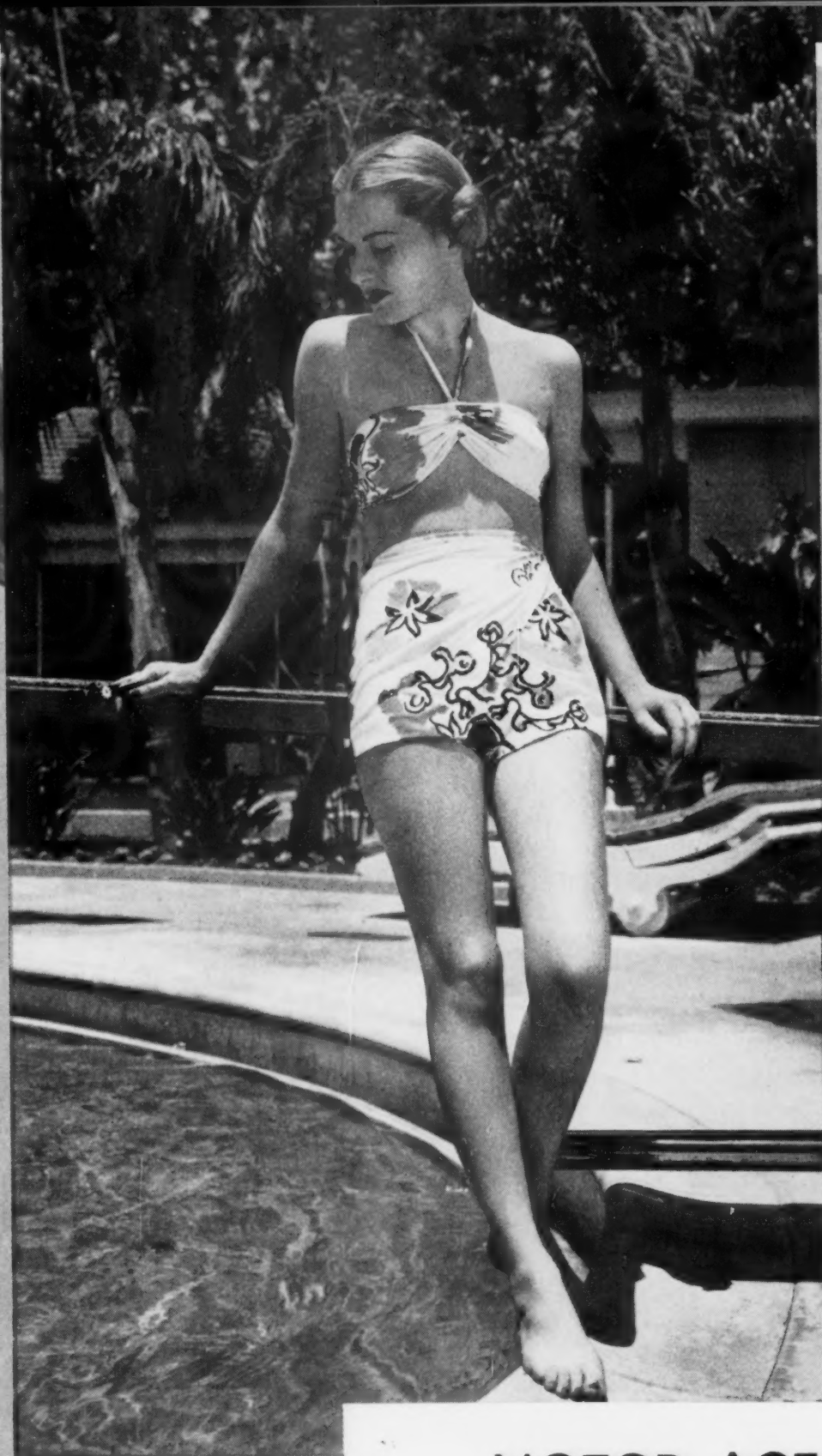
Up to this point, the routine is simple. Some garagemen do keep labor and material costs on jobs. Their error is in assuming that this is the all of cost accounting. The Peck's Bad Boy of cost account-

(Continued on page 98)

Figuring the exact cost of any job turned out by the shop sometimes brings out startling facts

"KEEP accurate books on what I take in and what I pay out, what I owe and what others owe me," said Jim Reynolds, proprietor of a garage at Northcrest. "The grocer or owner of a department store doesn't figure the cost of every sale, so why should I figure the cost on every job?"

Reynolds' argument is typical of many given by repair shop owners when one suggests the wisdom of keeping cost accounts. The weak spot in their reasoning is that their business, from an accounting standpoint, differs from that of a merchant but is like that of a manufacturer, who must determine the labor, materials and overhead cost on output. If a manufacturer did not keep special cost records, but



Mary Brewer is one of the world-famed Goldwyn Girls who appear in "The Secret Life of Walter Mitty," the film based on James Thurber's story of a hen-pecked little man whose fantastic daydreams transform him into a hero.

MOTOR AGE
PICTURE
GALLERY



Spectators crowd the opening of the 34th annual Paris Auto Show in the Grand Palais. There are 900 exhibitors in the largest auto show on earth.



An experimental flying automobile developed by Consolidated Vultee in San Diego is shown here at the start of taxi tests. It was one of a series of experimental planes until it crashed and was demolished.



The first Davis, a three-wheeled automobile which the manufacturer says can attain a speed of 116 mph, rolled off the assembly line at Van Nuys, Cal., recently.

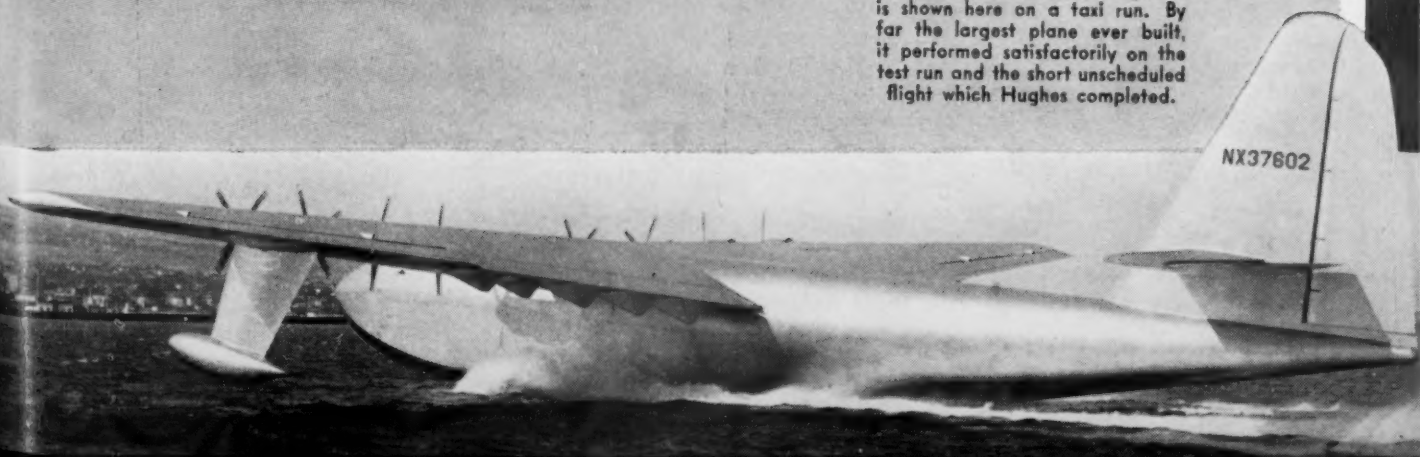


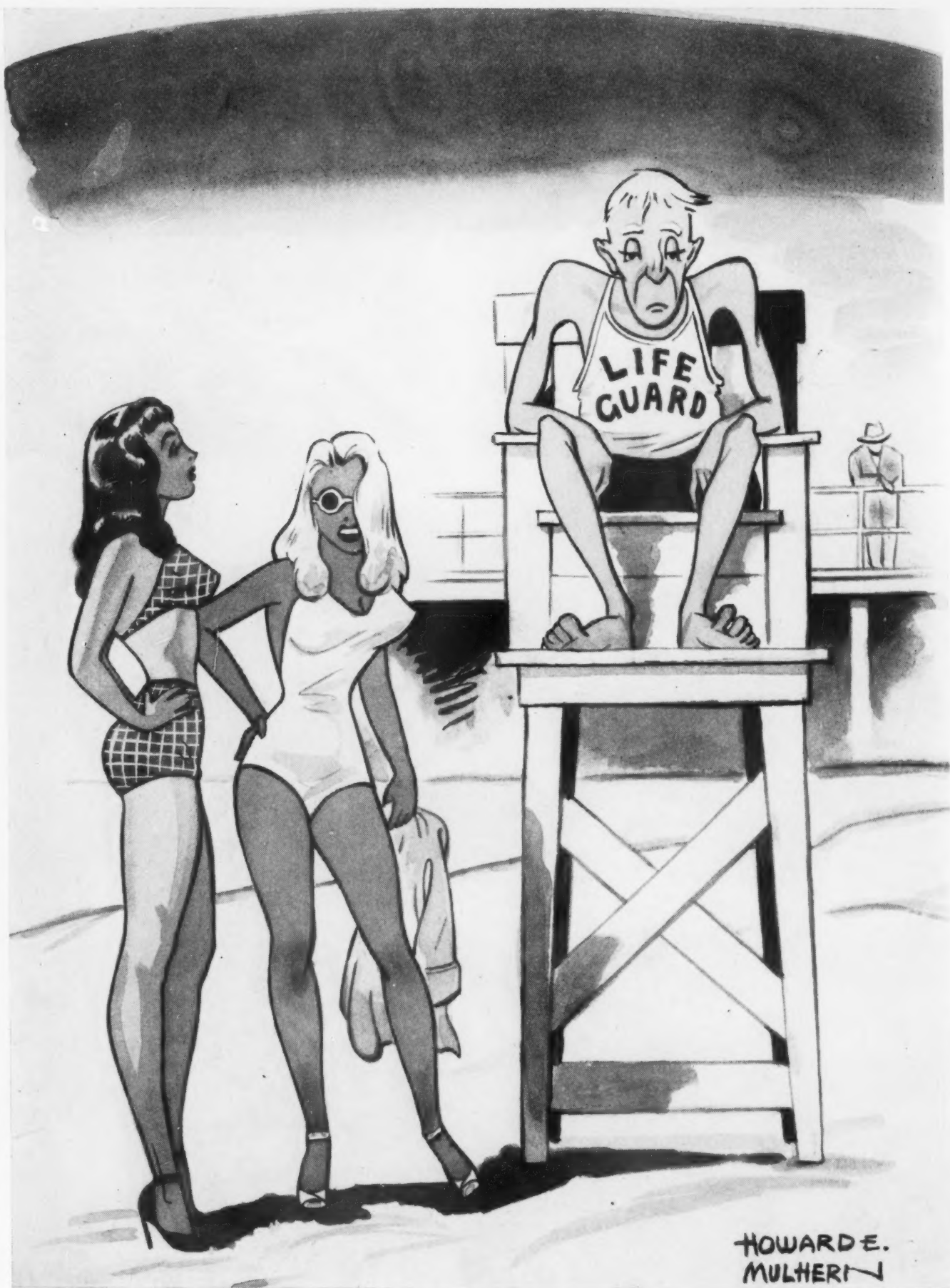
The Navy's new plane, the "Skyrocket," is equipped with both jet engine and rocket engine for increased power. The entire nose section, containing the pilot's compartment, can be jettisoned for escape. The plane is designed to travel at 650 to 750 mph.



The Delta Queen, largest boat on inland waters, is high and dry on the ways where she is undergoing beauty treatments. She will travel between Cincinnati and New Orleans, in an attempt to restore to river travel the popularity it enjoyed long ago.

The 200 ton Hughes flying-boat which figured prominently in a recent Congressional investigation is shown here on a taxi run. By far the largest plane ever built, it performed satisfactorily on the test run and the short unscheduled flight which Hughes completed.





"At least it keeps people close to shore."



CLEARING HOUSE

FOR SERVICEMEN'S QUERIES

Bill Toboldt, Editor, Motor Age

Interchangeable Pistons On Chevrolet Models

A customer has a '41 Chevrolet with dome pistons and has a set of high torque truck pistons of the same year which are flat, and he wants to install them in '41 Chevrolet motor. We can plane the head to increase compression if it is necessary.

We would like to know how much to plane the cylinder head to high compression H and M model International tractor.

We would also like to know if a rear axle of a Model A Ford truck worm gear drive will interchange with one spiral cut ring gear and pinion set and rear wheel hub.—Schueth Welding Shop, Winner, S. Dak.

CHEVROLET engines used in passenger cars and light trucks are identical. These have 216 cu. in. displacement and their engine numbers are preceded by the letters "AG" or "BG." The large truck engine has a displacement of 235 cu. in., and the engine numbers are preceded by the letters "AL" or "BL." This truck engine has a larger bore than the 216 cu. in. engine and consequently the pistons are not interchangeable.

On your International tractor engine you can plane approximately .065 in. from the cylinder head. It will also be necessary to install cooler running plugs and also to retard the spark slightly with a higher compression.

We have no information about the interchangeability of the Model "A" Ford worm drive rear axle with a spiral gear drive. I am fairly sure, however, that you will find the rear wheel hubs interchangeable.

Tight Valves Develop Every Thousand Miles

At about 18,000, this 1940 Chevrolet changed owners. New owner discovered leak in block, cracked from freeze-up. Used car four or five thousand miles, decided to install new short block. Used old head and pan, etc. Then the trouble began. Every thousand miles or so he had to adjust the valves, always too tight. He brought it to me. I did not install the block. I cleaned the valve guides thoroughly and installed new seats on exhaust valves, new springs, ground cam on rocker arms, new exhaust valves, torque wrench on head bolts, lubrication perfect. Never could get a perfect idle after new block was put in, before or after valve job. Installed new distributor, new wires, new carburetor, distributor cap. Tried other coil, put old back on. Checked intake manifold for leaks, cracks, and so forth. The vacuum was 19 in. of mercury at idle. Hand wobbles as though the distributor were worn. The jobs were performed at about 1000 miles apart. The same thing always happened, the valves tightened up after 600 or 800 miles.

This all started after the new block was installed. I am not operating an experimental station but this thing is a dandy. Can you help me?—A Pennsylvania Subscriber.

I think one of the possible causes of the trouble you are experiencing with that 1940 Chevrolet is in the valves themselves. It is entirely possible that these valves are of low-grade material and stretching badly. I suggest that you try a new set of valves from a manufacturer who uses dependable high quality material.

I would suggest you seat these valves to .008 in. and .006 in. after the engine is thoroughly warm. The Chevrolet factory insists that the engine be operated for approximately half an hour at least before tappets are adjusted so that the block will be equalized and that there will be no further stretching or expansion due to heat.

Vibrating Oil Gage Hand On Pontiac Rebore Job

I rebored a 1935 Pontiac 8 to .040 oversize, ground crank shaft to .010 U. S., con rod throws and mains to .020 U. S. and now I have a vibrating oil gage hand. The vibrations cover the dial from 30 to 60 lb. on the gage.

The engine runs perfectly with 30 lb. oil pressure at idling. This vibration seems to be at about the same speed as the crankshaft revolutions. A master oil gage hooked

to the oil galley at the side of the block and a new oil pump shows the same vibration. The owner says that the gage had some tendency to vibrate before I tore the engine down. Also an oil leak detector revealed nothing.—Phil C. James, 931 S. Sixth Street, Mount Vernon, Wash.

THIS is an unusual piece of trouble and in some cases it can be overcome by installing a longer line to the gage and making a loop in the line. This will tend to absorb any pulsations of the pressure and result in a steady reading.

When making the oil leak test, did you carefully examine the inside of the engine, paying particular attention to the oil lines so as to make sure there are no oil leaks anywhere?

One of the causes of this trouble might be in a defective relief valve.

Rebuilt Motor Vibrates After Careful Check-Up

Over a year and a half ago I had a motor rebuilt for a 1937 Buick.

I had the crankshaft journal and main reground and also had it re-bored. This and the installing of pistons and rods were done by a reliable motor builder. When the motor was installed in the car, it had a noticeable vibration when idling, and this condition continued up to 45 miles per hour. After this speed was reached the vibration was less, but the car is old and, at that speed, we could not tell too well if it was the car or not.

We tried a new vibration damper and checked the pressure plate and disk. We retimed the car and had the carburetor rebuilt. This did not help.

We took the car to the people who rebuilt the motor and they, in turn, called in the Buick distributor. He was just as mystified as we were and could throw no light on the cause of the trouble.

We then took the motor out of the car again and weighed each piston and they were all of the same weight. We returned it to the motor builder and they were to check for the vibration. They put in pistons and rods. Then they sent it back to us and told us the

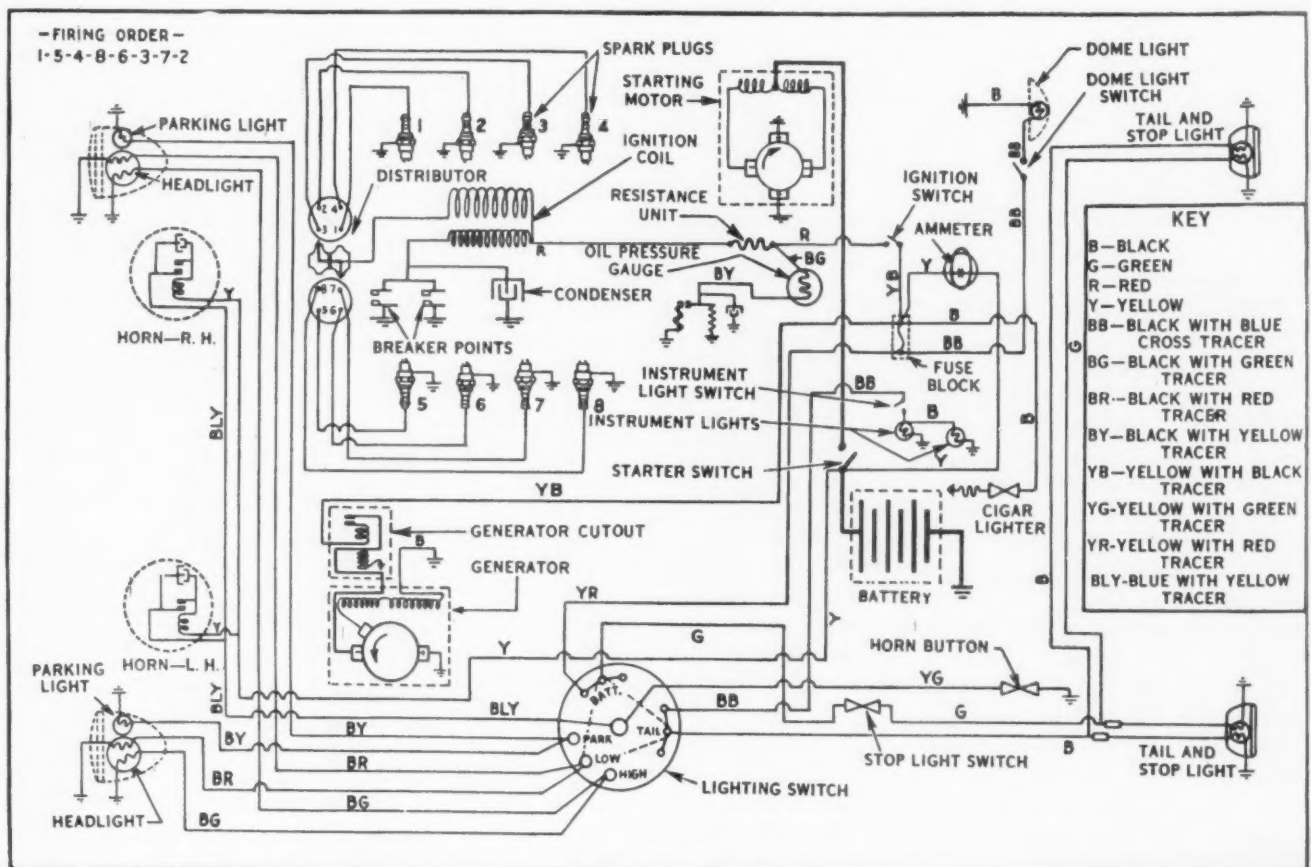
vibration was in some other part of the motor or the car.

This is the puzzling part of the situation. We installed a complete new motor in the car and we used the same distributor. We used the same flywheel, pressure plate and disk. When we started the car this time it ran like a clock, no vibration and it has continued to run good ever since.

I believed all along that the trouble was in the crankshaft but was unable to find anyone to check it. The motor rebuilder found the center main bearing .010 in. out of alignment. Can you tell me if this would make the car vibrate? Any information you can give me will be greatly appreciated.—Louis Paroletti, Louie's Tire & Motor Service, Weed, Cal.

I AM very much interested in the vibration you experienced in a rebuilt Buick engine. I am sure that you appreciate the difficulty in being able to determine the exact cause of the vibration. As you pointed out in your letter, you have had the engine and car checked carefully by several different ex-

Wiring Diagram of the 1935 Ford



perts, none of whom were able to determine definitely the cause of your trouble. However, I am inclined to think that the probable cause was misalignment at the center main bearing. I assume that is what is meant by your statement that the center main is .010 in. out of alignment with the other main bearings. This certainly would not contribute to making an engine run smoothly.

However, there is another point which was not considered and that is when you rebore an engine, compression pressures are also increased and the vibration that you experienced might have been what is known as combustion roughness rather than actual vibration.

Installing Mercury Engine in Lincoln

Recently we were asked by one of our customers if a Mercury engine could be installed in a 1939 Lincoln Zephyr. How many changes will have to be made and how much work will it involve?—A Washington subscriber.

INSTALLING a Mercury engine in a 1939 Lincoln Zephyr can be accomplished fairly easily and with little expense. Inasmuch as the clutch housing and clutch shaft are the same, the Mercury engine can be bolted in place very readily. However, it will be necessary to make new front motor mountings as the Mercury engine is shorter. These mountings can be made from channel iron and can be welded or riveted to the frame side members.

Install the engine in the chassis, bolt it together, place a jack under the front end then level and center the engine. Clamp supports to frame side rails, then locate and drill holes for the motor support bolts. Weld or rivet supports in place, install rubber mountings and assemble bolts. Install water hoses from any late model Mercury, and a fan shroud attached to the radiator will help keep the engine cool when idling. The Lincoln exhaust system can be used for the Mercury engine by cutting and splicing pipe with the use of a welding outfit, which is neither a long nor a complicated job.

Chev Burned Sixteen Sets of Points in a Year

A customer of mine is having trouble with his 1938 Chevrolet burning ignition points. It has burnt out 16 sets in the last year. As long as he keeps the motor running it works fine, but when he turns it off, it won't start without filing or replacing the points.

He has put on three different coils and several condensers, had the battery and cables changed. The points burn a deep blue color and many times a few strokes with a file is sufficient to get it started.

The local mechanics are stumped and mechanics in the larger surrounding cities could not help him. We will appreciate any help you can give us.—H. E. Thelen, Hub's Auto Supply, Howard, S. Dak.

IN regard to the trouble you are experiencing with burning ignition points on a 1938 Chevrolet, it seems to me the most likely cause of your trouble would be found in excess voltage. In other words, I think you will find the voltage regulator is set too high with the result that excessive voltage burns the breaker points.

I would, therefore, suggest you check the voltage at the coil and the breaker points and also the setting of the voltage regulator.

Factory Rebuilt Motor Lacks Pep and Power

I have a 1939 Ford with a "factory rebuilt" motor with about 8000 miles on it. This motor has not been satisfactory since installation. Although the oil consumption is one quart in over a thousand miles, the engine doesn't have the pep or power it should have. The main trouble seems to be on hills. When I want to accelerate there is very sluggish response. I can put it right to the floor and get no jump, but when I ease off, I get action. In other words it acts as if it was choked up or flooded. I have checked the acceleration pump and it seems okay. The carburetor is almost new and is in good shape. I have had the distributor synchronized and new points put in. At

(Continued on page 106)

BUTCH . . .



Dodge "Job-Rated" Truck Line Undergoes Overhaul

A total of 235 model variations, ranging from 4250 to 23,000 pounds GVW and up to 40,000 pounds GTW and including COE as well as conventional types, gives the new Dodge "Job-Rated" truck line a rounded coverage of the commercial vehicle field. This compares with 175 model variations in 1947.

In outward appearance the new trucks emphasize styling of advanced type which is carried out in the same theme on models of every capacity. In general, there is a change in styling, in cab design, and in specifications.

Noteworthy from the mechanical standpoint is that front axles have been moved back and engines forward. This places more of the chassis weight on the front axle and provides better weight distribution. The wheelbase for conventional models through the 2-ton has been decreased by eight inches, while the 2½- and 3-ton models have been reduced six inches. Despite the shorter wheelbase, the new trucks have been engineered so that previous standard "CA" dimensions remain practically unchanged, thus making it possible to use the same length bodies as before.

The shorter wheelbase and wider tread front axle, together with cross steering, a new feature on all models except the COE's, provide new ease of handling and driving. The cross steering permits a 37-degree turning angle both right and left. Drivers now can park, back into alleys or up to loading platforms with much greater ease.

Road shock through the steering wheel is greatly reduced by the

cross steering, which has the drag link running parallel with the front axle.

In addition, new and longer cabs are provided. Dodge is particularly proud of its new cabs—standard, de luxe and custom models—which have been completely redesigned to give more room, more visibility, more safety, and more comfort for the driver.

MID-WESTERN CIRCUIT

Big Car Point Standing
as of October 30, 1947

DRIVERS	POINTS
1. Johnny Shackelford	238
2. Spider Webb	200
3. Tommy Hinnershitz	190
4. Duke Dinsmore	166
5. J. Holme	162
6. Carl Ott	125
7. E. Zalucki	104
8. Rex Mays	100
9. Norman Houser	70
10. Charles VanAcker	67

PACIFIC COAST

Midget Point Standing
as of October 23, 1947

DRIVERS	POINTS
1. Danny Oakes	268.41
2. Ed Haddad	213.38
3. J. McDowell	209.04
4. Duane Carter	200.37
5. Henry Banks	176.51
6. Sam Hanks	160.20
7. Chick Barbo	154.97
8. Karl Young	124.02
9. Duke Nalon	114.73
10. A. Woodard	114.04

EASTERN CIRCUIT

Big Car Point Standing
as of October 30, 1947

DRIVERS	POINTS
1. Ted Horn	884
2. Thomas Mattson	731.5
3. Hank Rogers	668.5
4. Tommy Hinnershitz	641
5. Bill Holland	581.5
6. Mark Light	556.5
7. Joie Chitwood	516
8. Lee Wallard	402.5
9. Fred Carpenter	355.5
10. Walt Brown	344.5

Ted Horn Again Wins Nat'l AAA Big Car Crown

National Championship

Big Car Point Standing
as of November 3, 1947

DRIVERS	POINTS
1. Ted Horn	1,920
2. Bill Holland	1,610
3. Mauri Rose	1,000
4. Charles VanAcker	770
5. Rex Mays	765.7
6. Tony Bettenhausen	696.8
7. Walt Brown	650
8. Emil Andres	575
9. George Connor	560
10. Paul Russo	545
11. Jimmy Jackson	500
12. Cliff Bergere	393
13. Walt Ader	380
14. Duke Nalon	350
15. Duke Dinsmore	345.5

As Ted Horn streaked across the finish line at Arlington Down, Dallas, Texas, 25,000 speed fans roared their approval, for he was clinching the 1947 National AAA big car racing crown. It was Horn's second title in a row. Ted won top honors, as he did in 1946, by piloting "his own baby" . . . a Horn Engineering Company Special. He met and mastered the toughest dirt track competition in the United States, literally winning the coveted honors "the hard way."

The fight for the AAA championship started at Indianapolis. There Mauri Rose finished first and Bill Holland second, with Ted Horn taking third place. This gave Mauri Rose 1000 points, Bill Holland 800, and Ted Horn 700. Mauri Rose, because of other business activities, participated in only a few dirt track races and so the fight for national championship was left to Ted Horn and Bill Holland. This was a "neck-and-neck" race throughout the racing season, which was finally decid-

(Continued on page 82)

DECEMBER, 1947

a b c d

AAA Elects Officers At Washington Convention

Robert J. Schmunk, Cleveland, Ohio, president of the Cleveland Automobile Club and past president of the Ohio State Automobile Association, was unanimously elected president of the American Automobile Association, succeeding H. J. Brunnier, San Francisco, Calif., who served the organization as president for the past three years. Mr. Schmunk, who has been first vice president of the AAA and a member of the organization's Executive Committee, was named to the office by delegates at the 45th annual meeting, held in Washington.

Mr. Schmunk's career in the automotive world goes back to the beginnings of the motor car age, when as a young man in 1899 he became associated with three other men in the production of the first White Steamer, designed by Rollin White of the White Sewing Machine Company. The car was a success, and young Mr. Schmunk became superintendent of production, and was later sent out to establish service units throughout the country. He also took part in many endurance contests for early day motor vehicles, including several of the famous Glidden Tour runs. Those, incidentally, were supervised and run according to regulations laid down by the AAA.

Elected with Schmunk was Lou E. Holland, Kansas City, Mo., as AAA senior vice president. Holland, a member of the AAA Executive Committee, is also chairman of the organization's important Traffic Safety Committee, which sponsors a broad gauge traffic safety program including driver

(Continued on page 88)



Californian Chester Smith of the Reliable Transfer Company of Los Angeles, is shown driving in the national truck and full trailer driving competition which he won with a score of 332.5. See p. 125 for other contest results.

1948 Buick Will Feature Automatic Transmission

Buick announced recently that it will introduce a "completely new and different" type of automatic transmission in its 1948 line of cars scheduled for introduction in January.

Harlow H. Curtice, Buick general manager and vice president of General Motors, described the new Buick transmission as "Buick's answer to no-shift, clutchless driving."

"It eliminates not only the clutch but all gear shifting, even automatic," Curtice said. "It represents an entirely new advance in driving simplicity."

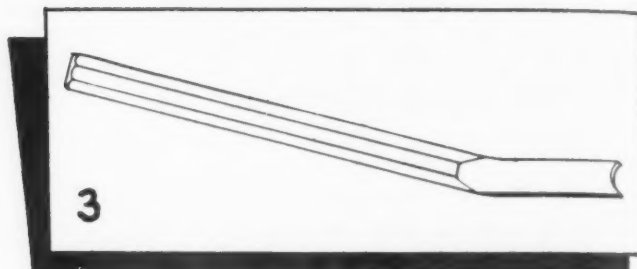
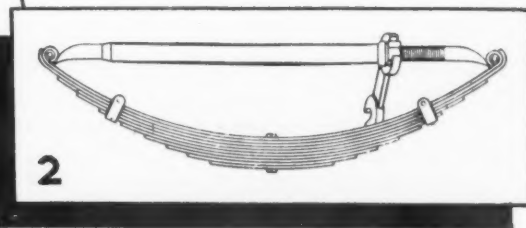
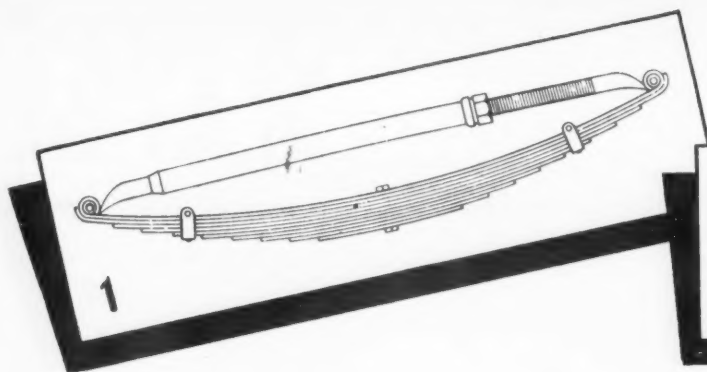
The new Buick transmission, to be introduced initially on Roadmaster models, is a development of the principle employed in the transmission used on tank destroyers built by Buick during the war.

Curtice said the tooling program for manufacture of the new transmission, costing several million dollars, is "well advanced."

Curtice reported that Buick's production, which continues to be limited by the availability of cold rolled steel, reached a total of 27,173 during October, bringing total 1947 model output thus far to 224,113 units.

Wisconsin ATA Elects Officers for the Year

The following officers were elected recently to serve the Wisconsin Automotive Trades Association for the coming term. President, H. F. Warsinske of Wisconsin Rapids; First Vice President, A. C. Hall of Milwaukee; Second Vice President, J. P. Gillespie of Madison; Secretary-treasurer, Bryan Roberts of Burlington; Executive Vice President, Louis Milan of Madison.



In the second of his series of articles the Maremont service manager continues his concise instructions on how to repair and replace springs on most of the popular makes of automobiles

Profitable Spring Service For Small Repair Shops

SINCE the suspension systems used on most cars and trucks are nearly identical, departures from the norm in spring service are few and far between. Once the mechanic masters the knack of spring-changing, he can spot most of these variations at sight, and alter his techniques slightly to meet them.

But heading the list marked "special handling" are all springs in the Ford-Mercury-Lincoln family and front springs on Studebaker cars. These models use one spring placed across the axle instead of the usual two along the sides of the car. In place, this transverse-type spring forms a high arch and presses firmly against the shackles. When removing this spring while working within the confines of the axle and the cross-members, the mechanic is faced with two problems.

He must flatten the spring to relieve the shackle pressure, and at the same time keep the eyes outstretched to prevent recoil. Both problems are easily solved by the use of a spring spreader, available thru any spring jobber. This inexpensive tool consists of an adjustable steel screw inside a steel tube. (Fig. 1)

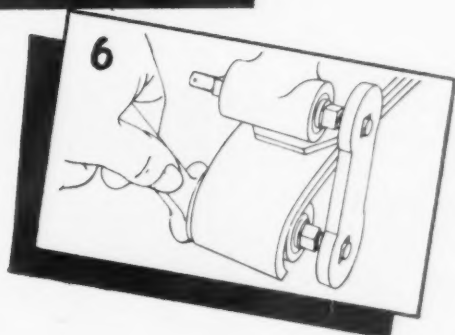
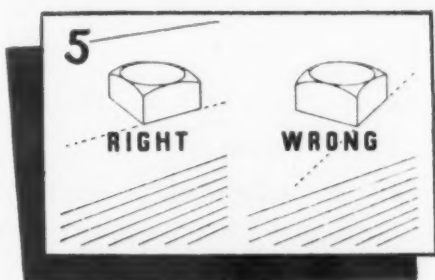
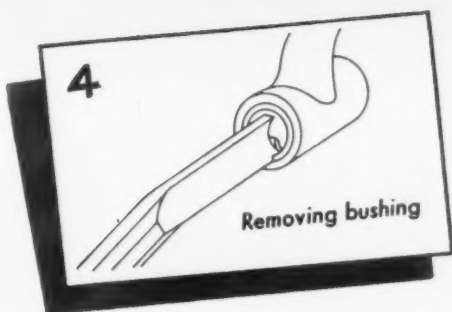
The chiseled ends of the spreader fit under the eyes of the spring, so that as the adjusting nut is turned, the spring can be spread to desired length. Since it remains in place during the process, it prevents any danger of the spring snapping back.

The procedure for removing these springs is as follows:

First, the wheels of the car are blocked front and rear. The car is jacked up until the support of the body is off the springs. For front springs, place the jack directly behind the wishbone. For rear springs, use two jacks, one on each side at the rear of the frame. Loosen the U-bolt nuts and remove them, but leave the bolts in place.

Apply the spring spreader adjusting the nut so that the chiseled ends fit under the eyes of the spring. (Fig. 2) Then turn the nut with a wrench, spreading the spring until the shackle pressure is eased. Knock out the shackle pins with a hammer, freeing the spring. Remove the spring from the shackles, being careful not to jar the spreader loose.

With the spring out, check the shock absorbers and



by REUBEN M. SCHUTZ

the shackles. Both shocks must be free from resistance to give proper damping to the springs. If they are found defective, replace them with new ones. In checking the bushings, a different perch-type of shackle will be encountered. Within this shackle are an inner pin, an outer shell and a rubber sleeve, all vulcanized into one unit.

By the time the springs are worn and defective, the bushings have often been overworked, also. The sleeve moves in place with each deflection of the spring, with the result that the rubber loses its resiliency, and breaks or crumbles. If the bushing will not slide out easily, a second special spring tool—the bushing remover, should be used. (Fig. 3) It is an angular-handled chisel with a concave end and two $\frac{1}{8}$ inch cutting points.

Remove the inner pin and the remnants of the rubber with a tapered punch or drift pin. Then insert one of the edges of the bushing remover between the perch and the shell. (Fig. 4) Tap it with a hammer until enough of a strip is peeled back to pry loose and remove the bushing. Before replacing with a new

bushing, remove all the rusted spots from the perch with sandpaper or a round file.

If you carry springs for popular cars in your stock, you can eliminate tied-up pits and the time lost waiting for replacement orders to be filled. Check the new spring carefully with the old one to avoid any possible errors. See that they correspond in length, width and arch, making allowance for sagging. If part of the old main leaf is missing, you can double check the length by measuring from eye to eye along the main leaf or comparing with manufacturer's specifications.

Turn the center bolt head so that its sides run parallel with the edges of the spring (Fig. 5). Then place the spreader in the new spring and adjust it to the proper length. Fit the center part of the spring into the channel of the cross member. Turn the adjusting nut until each of the eyes reaches its corresponding shackle. Place the shackle link on the rear stud of the bushing. Install the stud of the spring eye into the lower opening on the link, turning the stud with a wrench (Fig. 6) so that the link rests firmly against both bushings.

Now place another link on the front side of the same studs. Apply the four nuts, tighten and install cotter pins. Repeat the same process at the opposite shackle. Adjust the jacks until the head of the center bolt fits into the opening provided for it in the frame. Start the nuts up the thread of the U-bolts, and tighten them in order going around three or four times until you can feel the nuts creak. Remove the jack and the job is completed.

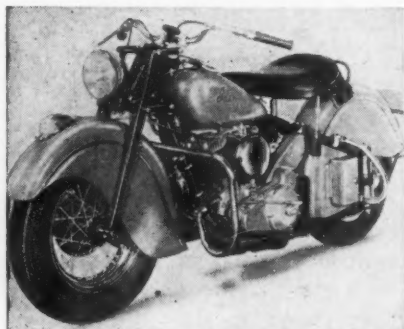
Through the use of the spring spreader and the bushing remover, installation and removal of Ford family and Studebaker springs has become as simple as any other type. One point to emphasize in the spring service done in your shop is to keep U-bolts TIGHT. When the job is finished, recheck the U-bolt nuts and offer to retighten them for the car or truck owner after he has driven 100 miles to insure safety and satisfaction.

NEW PRODUCTS



D-1—Four New Machines Introduced by Indian

The Indian Motorcycle Company has introduced four new models, the Clubman, Sportsman, Roadmaster and a police special. These



1948 heavy motorcycles are powered with an improved "Dyna-Power" 74 cu. in. engine. A spring frame rear wheel, strut-type front fork with flexible coil springs held in check by a hydraulic shock absorber, full powered brakes and rubber mounted handlebars provides increased riding comfort. Streamline styling has been incorporated into a new instrument panel, full skirted fenders, sealed beam headlight and matched accessories. Other modifications include an improved aluminum cast crankcase, all-gear drive oil pump, silent-type kickstarter, high output generator, magnetic-type speedometer and pressure fittings on all wheel bearings. Two new lightweight Indians will appear in the Spring.

(For further information use coupon on p. 62)

D-2—Aircraft-Marine Wire Stripper-Cutter

A new pocket-size combination wire stripper and wire cutter cov-

ering a wide range of wire sizes, 22 to 10, is being manufactured by Aircraft-Marine Products, Inc. Known as the AMP "Yellow Jacket," it incorporates a built-in wire cutter, serrated plier jaws and a stud size gage. The accurately sized stripping notches also serve as a wire size gage.

(For further information use coupon on p. 62)

D-3—Miller Announces Pump and Hydraulic Ram

The Miller Hydraulic Engineering & Sales Company has announced a new pump and hydraulic ram. This unit is single acting and manually operated, and is small in size, requiring a minimum of space for installation and operation. The control valve has a positive action and permits lowering at any desired speed, regardless of position of the operating handle. Three standard sizes of rams are available, having lifting capacities from 2210 to 8885 pounds. Rams can be furnished with any stroke, type of



bottom and top of plunger to meet all requirements.

(For further information use coupon on p. 62)

D-4—"Karvisor" Mounted On New-type Attachment

Dieterich Products Corporation, manufacturers of "Karvisor" exterior windshield shades, have developed a new attachment bracket



for securing "Karvisors" in place. This new bracket is especially designed to simplify installation and adjustment and to render the method of installation more inconspicuous. As before, no drilling is required for "Karvisor" installation with the new bracket. Its construction permits painting of all the metal parts to match the finish of the car. Four standard models are applicable to any standard make or model of car equipped with drip troughs.

(For further information use coupon on p. 62)

D-5—Radiator Specialty Adds Liquid Seal to Line

The Radiator Specialty Company, manufacturers of Solder Seal Radiator Repair Metallic Compound, have added a new product, Liquid Solder Seal, to their line. Liquid in form, and harmless to aluminum and other metal parts and connections, this compound can be used with any anti-freeze solution.

(For further information use coupon on p. 62)

D-6—Hall All-Purpose Rotor Repair Lift

The Hall All Purpose Rotor Hoist is a repair lift that clamps the car in position and turns it on its side. Interchangeable from electric to hydraulic operation it can be set up on any garage floor. Consisting of four posts and two rails it will hold the car in any desired position. One of the posts contains a chain block and hoist which may be used to raise and lower the engine. With the car in its tilted position it is possible for the mechanic to do underside repair work while he is either standing up or seated.

(For further information use coupon on p. 62)

D-7—Magnus Aja-Dip Line Has Been Re-designed

The Equipment Division of the Magnus Chemical Company has re-designed and augmented its line of Magnus Aja-Dip Cleaning Machine. The outward appearance has been streamlined, with grouped control and instrument panel. The drive mechanism is now entirely located in the front of the machine for easier access and servicing. All the mechanical features of the Magnus Aja-Dip Cleaning Machine have been retained in its new model. Cleaning is accomplished by mechanically raising and lowering the platform containing the parts to be cleaned 60 times a minute through the cleaning solution with an 8 inch vertical stroke. Cleaning is fully automatic and re-



quires labor only for loading and unloading. These machines are available in 13 sizes and types from the Midget type handling a few pounds of work to the Jumbo type handling 2200 pounds at a time.

(For further information use coupon on p. 62)

D-8—Hobart Brothers Introduce New AC Welder

The Hobart Brothers Company has introduced a new AC welder especially designed for use with modern "Heliarc" Equipment as supplied by Linde Air, using helium or argon for Inert-Gas-Shielded Welding. This equipment is particularly adapted to welding magnesium alloys, aluminum, stainless steels, high carbon and other alloy steels, brass, Monel, Everdur, and other hard-to-weld metals. In addition to Hobart's standard AC welder features, this Model TIH-300-s embodies high



frequency stabilization to insure easy starting and dependable maintenance of the gas-shielded arc with practically no rectification of the AC current passing through it.

(For further information use coupon on p. 62)

D-9—Master Automotive Parts Balanced Index

Master Products Manufacturing Company have announced their new Master Automotive Parts Balanced Index System. The new index is designed to simplify catalog maintenance and facilitates both filing and finding of desired sheets. This system is available in tailor made forms to suit any individual jobber or dealer line and each index is compiled to order, eliminating blank sections and insuring orderly arrangement of all index tabs in evenly spaced banks. Accessories or supplies are organized into 42 major classifications. Behind each

major classification tab, manufacturers in that particular field are sub-tabbed for quick location of particular brands.

(For further information use coupon on p. 62)

D-10—Whale Pli-rench Has Self-aligning Jaws

A new Whale Pli-rench features self-aligning jaws that make pos-



sible a full jaw-length grip on both straight or angular objects. A locking arrangement provides a one-ton grip. Usable as a pliers, wrench, clamp or vise, the Pli-rench is suitable for a variety of jobs in shops, garages, farms, homes and factories.

(For further information use coupon on p. 62)

D-11—Auburn Spark Plug Offers New Plug Cleaner

A foot-control spark plug cleaner is now in production by the Auburn Spark Plug Company. Operation of the new Auburn Cleaner, which is designated as Model 48, is controlled by a brass foot-valve, and leaves both hands free for cleaning plugs. There is included a built-in tray providing adequate space for plugs before and after cleaning and a place for storing adapters of various sizes. A Gapping Tool and Gage permanently attached to the cleaner tray.

(For further information use coupon on p. 62)

D-12—Four-Piston Ring Compressor by Calvin

A 4-Piston Ring Compressor has been announced by Calvin Machine Products, Incorporated. This is a revised model of their No. 569 Two Band Ratchet Type Piston Ring Compressor. Instead of the conventional 2½ inch wide band, Calvin now has increased the width to 3 inches so that it is large enough to compress 4 ring pistons, such as those found on Pontiac, Hudson and Ford cars.

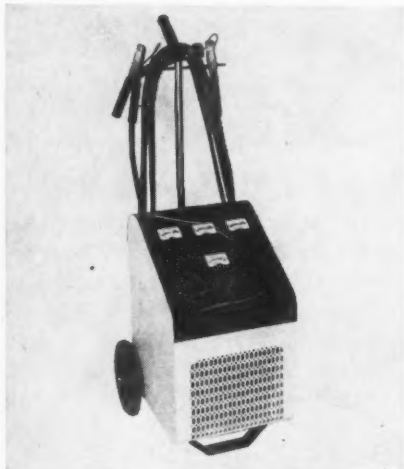
(For further information use coupon on p. 62)

(Continued on page 62)

New Products (Continued from page 61)

D-13—Fox Multi-Purpose 6 or 12 Volt Charger

The Fox Products Company's new Multi-Purpose 6-12 charger handles both 6 volt automotive batteries and 12 volt batteries used on trucks and buses. Designed for both fast and slow charging, the



6-12 Multi-Purpose slow charge circuit includes a full range of adjustment of slow charge. The fast charge rate is regulated by an electric time switch powered by a

synchronous motor. A fully automatic circuit breaker shuts off the charger in case of serious overload or reverse terminal connections and a five blade 8 in. pressure type fan cools the unit.

(For further information use coupon below.)

D-14—William & Harvey Rowland Issue Catalog

A new catalog listing all popular leaf springs and main plates for cars and trucks has been issued by William & Harvey Rowland, Incorporated. This catalog contains make and model listings for cars from 1928 to 1947, inclusive, plus interchange list with manufacturer's part numbers, chart covering repair plates, listing of helper springs, and extra leaf kits and spring parts.

(For further information use coupon below.)

D-15—Blackhawk's Post-War Catalog Released

Blackhawk's postwar wrench catalog has been released, including an enlarged number of items. The 36 page catalog pictures 16 new

assortments and contains 134 more wrenches than have been listed since 1943. Many of the added numbers are new to the industry. A portion, however, are re-instatements of pre-war wrenches. These principally include the complete series of "Nugget" socket wrenches made of "Hexite." These "Hexite" wrenches have a 7/16 inch drive and are designed to eliminate both the 3/8 inch and 1/2 inch drive.

(For further information use coupon below.)

D-16—Standard-Thomson Introduces New Spotlight

The Standard-Thomson Corporation is now producing a new spot-



light. The light is available in two sizes, two separate models, both with sealed beam bulbs. Featured are the Thomson "Pistol Grip" control, switch in handle, solid brass head, chrome-covered housing and a universal bracket to fit all cars. It has a dual-swing full 360 degrees horizontal rotation.

(For further information use coupon below.)

D-17—American Hammered Compression Ring Improved

All compression rings in the American Hammered Piston Ring line will be made of a new type of metal according to an announcement by the Piston Ring Division of the Koppers Company. Known as F-88 High Strength Iron, it is a centrifugal casting of a special formula developed by American Hammered. It is described by the manufacturer as being two and one-half times stronger than ordinary piston ring iron and as unbreakable in service. The new metal is being used first in the production of certain ring sizes and will be applied to the balance of the line progressively as production facilities permit.

(For further information use coupon below.)

WHERE Can I Get It?... HOW Much Will It Cost? . . .

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The Chevrolet Dealer Management Plan

**More than 1800 dealers requested this plan in
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by LEONARD WESTRATE

ONE of the most important postwar projects of Chevrolet's dealer program is a management plan which gives the dealer a daily financial summary of business in all his departments. Developed after 14 months of study, the plan consists of daily record forms which are kept by each department—new car sales, used car sales, parts and accessories, and service—and the dealer's master control record. In addition, forms are provided for recording the performance of individual car salesmen, for a sales and profit forecast, for the dealer's consolidated trend record, and for an accountant's daily worksheet.

The basic philosophy behind the plan is that with the toughest competitive market in history coming, sooner or later, the dealer must be in close touch with his business in order to detect soft spots as soon as they appear. Because the automobile business involves trade-ins, accounting systems which provide an analysis of the previous month's business as late as two or three weeks after the close of the month are not considered adequate. Under such a system, Chevrolet contends, changes in economic conditions, and out of line trends are not evident to a dealer until his profits have been undermined. The daily management plan, however, offers him a chance to see at once

which departments are in difficulty and which are operating satisfactorily, enabling him to attempt a correction before losses pile up.

The key to the plan is the monthly and daily sales objectives. These are determined at the beginning of the month in a conference with the department heads. After considering business conditions, market trends, previous month's business and all related factors, fair and reasonable monthly objectives are set for each department and for each different category in the department. They are broken down also into daily objectives and entered in the record.

Each day the items in each column are brought forward on a *cumulative* basis so that the total represents the month's business to date, which can be evaluated in relation to the monthly objective. The Sunday line carries the accumulated month-to-date objectives for each item. Thus at the close of Saturday night's business, the dealer has a clear picture as to where he stands in relation to his objective.

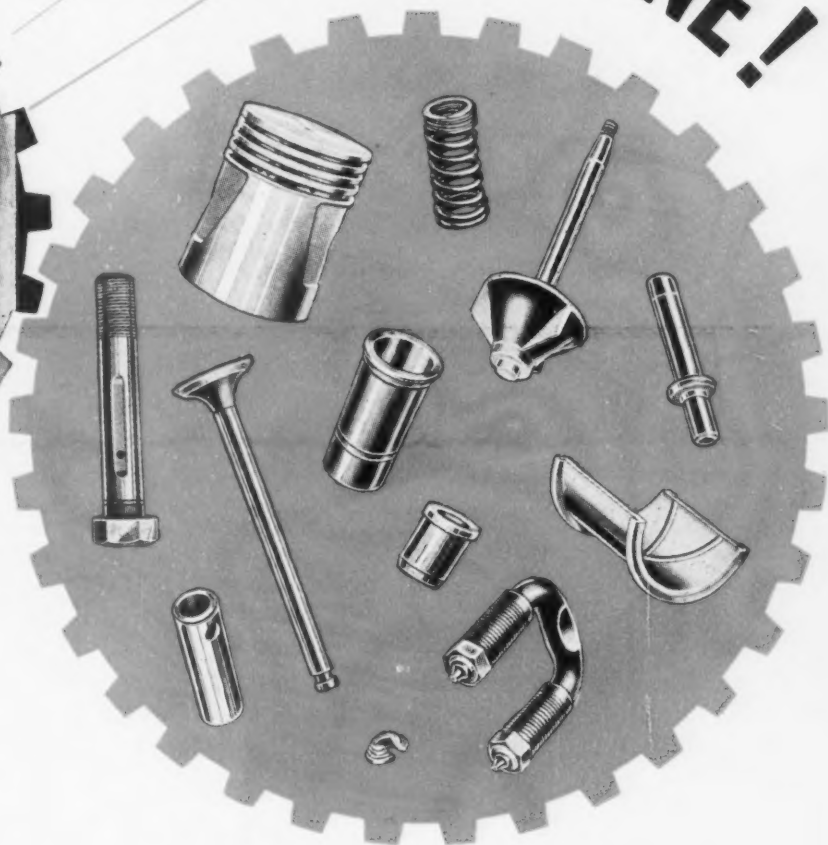
Records for each department vary, of course, to meet specific needs. The new car manager's control record lists three principal divisions. The retail unit sales section lists sales of Chevrolet and other make passenger cars, commercial vehicles, and the total. The

second section shows gross profit on retail sales and is broken down under five headings to show new cars (including financing and handling), accessories, special body and truck equipment, discounts and overallowances (in red) and retained gross profit. An additional space is provided for supplementary information not covered by the other two sections. After the new car goals are set and the discounts and overallowances determined in dollar values for the month, the manager of the department breaks down the quota among his salesmen on the basis of his knowledge of the men, and previous experience. The salesman is given in addition to his quota of the new car gross, accessory gross, and his discount and overallowance budget. On the salesman productivity record these items are entered in the daily and monthly objective column together with goals for retained gross profit on each deal and for the month. Other entries kept on the record are the date the order is received, delivery date, customer's name and the model. Thus the manager has a complete record of individual salesmen's performances and can tell which men are producing satisfactorily, and which are weak in such matters as overallowances, selling too few higher profit models or commercial vehicles, failing to sell accessories, and so forth.

A big advantage of this system is that if the discount and overallowance budget still has a sizable reserve toward the close of the month, the dealer can go back and pick up some deals which may have been turned down earlier because the trade-in demanded by the customer was too "long" to be considered at that time. An interesting supplementary form has been developed which is made out for each prospect and which is helpful in locating promising deals when the budget will permit it late in the month. This lists the prospect's name, the model, date, stock number and salesman. The car gross and special equipment and accessory gross are listed to show the total gross on the deal. Next the trade-in allowance and cost of reconditioning are noted and to-

(Continued on page 118)

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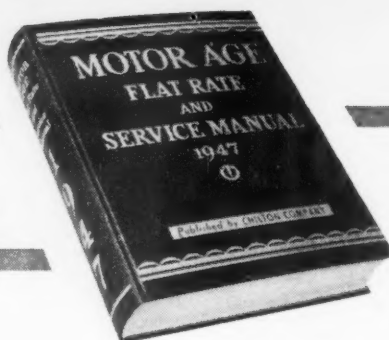
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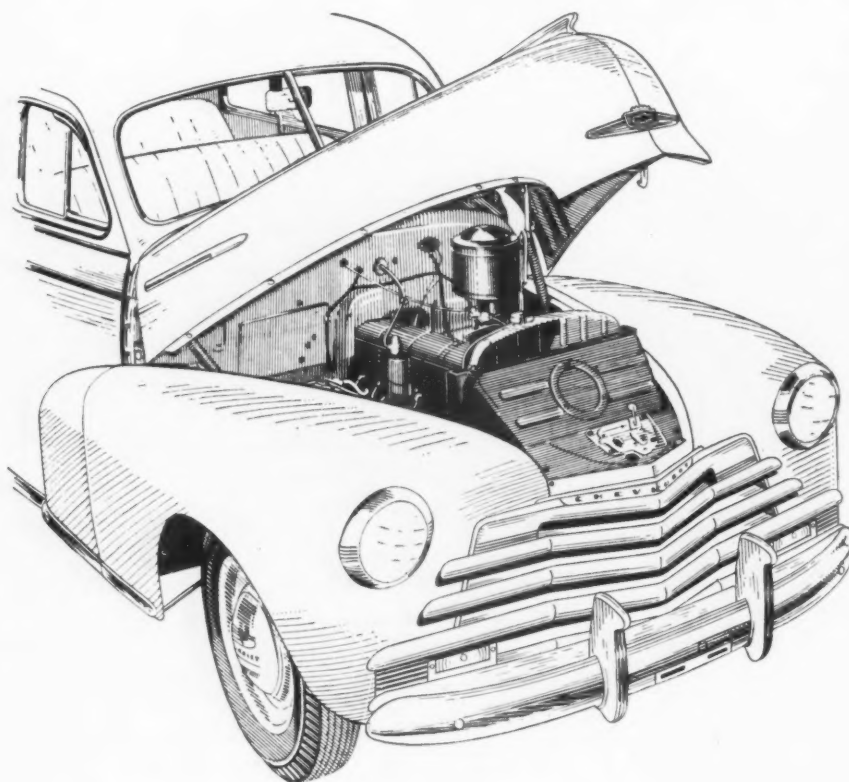


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SERVICE MANUAL DEPARTMENT



Aligning Chevrolet Hoods

MODERN body styling makes close tolerances between panels necessary if the car is to present a smooth, streamlined appearance. This is particularly true of the hood, which is probably the most noticeable part of the front end of the car. With this in mind, Chevrolet has evolved a factory procedure designed to help the serviceman in the alignment of hood and fenders.

Before any alignment is attempted the job should be carefully checked to determine just where the mis-

**All the necessary information
on lining up the hood where it
meets the fenders and doors**

alignment exists. This check should be made with the hood in its free and unbolted position.

First of all, the hood is raised and blocked in open position. The hood lock bolt and hinge springs are removed, taking particular care with springs, as they are under very heavy tension. One hinge to cowl bolt is loosened at each hinge. The hood is then lowered and the two additional hinge to cowl bolts are loosened at each hinge, working from inside. The hood is now in its free and unbolted position and should lie in the natural cradle provided by the fenders, forming a smooth, flush joint along the hood and fender opening on both sides. The gap between hood and cowl and hood and doors should be uniform between $5/32$ and $7/32$ in.

If the gap between the hood and cowl or doors is irregular, it may be possible to make correction merely by shifting the hood until the correct alignment is obtained. The hinges are then tightened and the springs replaced.

It is particularly important that the hood and fenders meet properly at the rear. If the hood overlaps the fenders at this point, it should be blocked open and aligned as follows: The hood hinge spring bracket to cowl bolts and the fender tab to cowl belt are removed. Washers should then be inserted to spread the fenders apart. The bolts are then replaced and tightened securely and the hood is lowered and checked for alignment.

The hood should also rest evenly and squarely in the front fender opening at the grille. If this fender

(Continued on page 102)

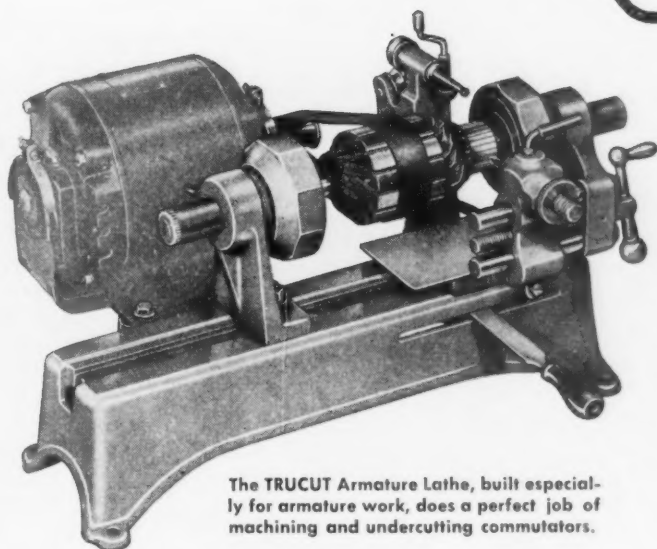


MORE PROFIT

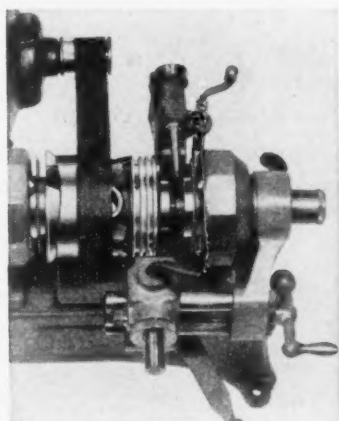
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Current Passenger Car Price, Weight and Body Table

Following are prices at factory for cars with standard equipment as of December 1. State or local taxes, transportation and finance charges and optional equipment are extra.

BODY, MAKE AND MODEL	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight	BODY, MAKE AND MODEL	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight	BODY, MAKE AND MODEL	List Price at Factory without Federal Taxes	Federal Taxes and Handling Charges	Delivered Price at Factory including Federal Taxes	Shipping Weight
BUICK					DODGE					OLDSMOBILE (Continued)				
Series 40					DeLuxe					Series 78-Eight				
Sedanet, 2d.	\$1497	\$114	\$1611	3670	Coupe, 2d., 3p.	\$1347	\$75	\$1422	3146	Std. Club Sedan, 2d.	\$1530	\$113	\$1643	3612
Sedan, 4d.	1556	117	1673	3720	Sedan, 2d.	1417	78	1495	3238	Std. Sedan, 4d.	1600	117	1717	3638
Series 50					Sedan, 4d.	1457	81	1538	3256	DeLuxe Club Sedan, 2d.	1645	117	1762	3650
Sedanet, 2d.	1708	135	1843	3795	Custom					DeLuxe Sedan, 4d.	1710	120	1830	3705
Sedan, 4d.	1790	139	1929	3910	Club Coupe	1502	83	1585	3241	Series 98-Eight				
Convertible Coupe, 2d.	2175	158	2333	4050	Sedan, 4d.	1507	83	1590	3281	Club Sedan, 2d.	1740	125	1865	3714
Estate Wagon	2622	183	2805	4170	Town Sedan	1577	87	1664	3331	Sedan, 4d.	1790	127	1917	3793
Series 70					Convertible Coupe	1812	99	1911	3461	Convertible Coupe	2160	147	2307	4049
Sedanet, 2d.	1968	163	2131	4095	Sedan, 8p.	1861	103	1964	3757					
Sedan, 4d.	2065	167	2232	4190						PACKARD—1948				
Convertible Coupe	2463	188	2651	4345	FORD					Eight-2201				
Estate Wagon	3030	219	3249	4445	DeLuxe Six					Club Sedan	1998	127	2125	3750
					Coupe, 2d.	1078	76	1154	3033	Touring Sedan	2022	128	2150	3820
CADILLAC					Tudor	1133	79	1212	3183	Station Sedan	3161	199	3350	4080
Series 61					Forador	1188	82	1270	3213	DeLuxe Eight-2211				
Club Coupe, 2d.	2060	140	2200	4080	Super DeLuxe Six					Club Sedan	2212	138	2350	3770
Touring Sedan, 4d.	2175	149	2324	4165	Coupe	1170	81	1251	3033	Touring Sedan	2235	140	2375	3850
Series 62					Tudor	1225	84	1309	3183	Super Eight-2202				
Club Coupe, 2d.	2290	156	2446	4145	Sedan Coupe	1245	85	1330	3133	Club Sedan	2505	160	2665	3810
Convertible Coupe, 2d.	2720	182	2902	4455	Forador	1285	87	1372	3233	Touring Sedan	2529	161	2690	3880
Touring Sedan, 4d.	2360	163	2523	4235	DeLuxe Eight					Conv. Victoria Coupe	2990	185	3175	4025
Series 60-Special					Coupe	1150	80	1230	3066	Super Eight-2222				
Touring Sedan, 4d.	2990	205	3195	4370	Tudor	1205	83	1288	3216	Touring Sedan, 7p.	3109	191	3300	
Series 75					Forador	1260	86	1346	3246	Limousine, 7p.	3252	198	3450	
Business Sedan, 8p.	4095	273	4368	4790	Super DeLuxe-Eight	1245	85	1330	3066	Sedan, DeLuxe, 7p.	3442	208	3650	
Touring Sedan, 4d.	4190	281	4471	4875	Coupe	1295	87	1382	3216	Limousine, DeLuxe, 7p.	3584	216	3800	
Business Imperial, 8p.	4275	285	4560	4800	Tudor	1320	89	1409	3166	Custom Eight-2206				
Sedan, 4d., 7p.	4400	286	4686	4895	Sedan Coupe	1350	90	1440	3266	Club Sedan	3413	212	3625	4140
Imperial, 7p.	4590	297	4887	4930	Forador	1635	105	1740	3266	Touring Sedan	3461	214	3675	4210
					Conv. Club Coupe	1855	117	1972	3520	Conv. Victoria Coupe	3860	235	4095	4380
CHEVROLET					Station Wagon	2150	132	2282	3366	Custom Eight-2226				
Stylemaster-EJ					Sportsman					Touring Sedan, 7p.	4250	254	4504	
Business Coupe, 2d.	1080	80	1160	3050	FRAZER					Limousine, 7p.	4406	262	4668	
Sport Coupe, 2d.	1120	82	1202	3060	Sedan, 4d.	2152	212	2364	3375					
Town Sedan, 2d.	1135	84	1219	3075	Manhattan Sedan	2550	286	2836	3375	PLYMOUTH				
Sport Sedan, 4d.	1190	86	1276	3130						DeLuxe				
Fleetmaster-EK					HUDSON					Coupe, 3p.	1139	66	1205	2977
Sport Coupe	1195	86	1281	3090	Super Six-171					Sedan, 2d.	1164	68	1232	3047
Town Sedan, 2d.	1200	86	1286	3125	Coupe, 2d., 3p.	1516	112	1628	2875	Sedan, 4d.	1189	69	1258	3037
Sport Sedan, 4d.	1255	90	1345	3185	Brougham, 2d.	1588	116	1704	3055	Club Coupe	1214	70	1284	3082
Cabriolet	1525	103	1628	3390	Coupe Coupe	1626	118	1744	3040	Special DeLuxe				
Station Wagon	1775	118	1893	3465	Sedan, 4d.	1631	118	1749	3110	Coupe, 3p.	1209	69	1278	2982
					Convertible Brougham	1889	132	2021	3220	Sedan, 2d.	1239	71	1310	3062
Fleetline-EK					Commodore Six-172					Club Coupe	1264	72	1336	3057
Aerosedan	1225	88	1313	3125	Club Coupe	1762	125	1887	3090	Sedan, 4d.	1289	74	1363	3107
Sedan	1280	91	1371	3150	Sedan, 4d.	1770	126	1896	3175	Convertible Coupe	1565	89	1654	3282
					Super Eight-173					Suburban	1669	94	1763	3402
CHRYSLER					Club Coupe	1727	128	1855	3210	PONTIAC				
Royal-Six					Sedan, 4d.	1733	129	1862	3260	Torpedo Six				
Coupe, 2d., 3p.	1561	87	1648	3373	Commodore Eight-174					Business Coupe	1287	100	1387	
Sedan, 2d.	1626	90	1717	3458	Club Coupe	1821	134	1955	3280	Sport Coupe	1338	102	1438	3300
Club Coupe, 2d.	1651	91	1742	3443	Sedan, 4d.	1837	135	1972	3330	Sedan, 2d.	1350	103	1453	3305
Sedan, 4d.	1661	92	1753	3523	Convertible Brougham	2050	146	2196	3435	Sedan Coupe	1380	104	1484	3305
Sedan, 8p.	2043	112	2155	3977	KAISER					Sedan, 4d.	1406	106	1512	3330
Limousine, 8p.	2163	119	2282	4022	Sedan, 4d.	1967	207	2174	3302	Conv. Sedan Coupe	1690	121	1811	3570
Windsor-Six										Conv. Sedan Coupe, DeLuxe	1730	123	1853	
Coupe, 2d., 3p.	1611	89	1700	3383	LINCOLN					Streamliner Six				
Sedan, 2d.	1691	93	1784	3468	Club Coupe	2370	163	2533	3915	Sedan Coupe	1439	108	1547	3405
Club Coupe, 2d.	1701	94	1795	3448	Sedan, 4d.	2390	164	2554	4015	Sedan, 4d.	1487	111	1598	3460
Sedan, 4d.	1711	94	1805	3528	Club Coupe, Custom	2530	171	2701	3915	Station Wagon, Std.	2092	143	2235	
Sedan Traveler	1846	102	1948	3610	Sedan, 4d., Custom	2550	172	2722	4015	Station Wagon, DeLuxe	2166	146	2312	3725
Convertible Coupe	1991	109	2100	3693	Convertible Coupe	2950	193	3143	4245	Torpedo Eight				
Sedan, 8p.	2093	115	2208	3977	Continental Coupe	4380	282	4662	4125	Business Coupe	1332	102	1434	
Limousine, 8p.	2213	121	2334	4052	Continental Cabriolet	4460	286	4746	4135	Sport Coupe	1381	104	1485	3365
					MERCURY					Sedan, 2d.	1395	105	1500	3375
Saratoga-Eight					Sedan, 2d.	1490	102	1592	3268	Sedan Coupe	1425	106	1531	3375
Coupe, 2d., 3p.	1873	103	1976	3817	Sedan Coupe	1540	105	1645	3218	Sedan, 4d.	1451	108	1559	3415
Sedan, 2d.	1948	106	2054	3900	Town Sedan, 4d.	1555	105	1660	3298	Conv. Sedan Coupe	1735	123	1858	3645
Club Coupe, 2d.	1958	107	2065	3892	Club Convertible	1880	122	2002	3368	Conv. Sedan Coupe, DeLuxe	1775	125	1900	
Sedan, 4d.	1973	108	2081	3972	Station Wagon	2075	132	2207	3571	Streamliner Eight				
New Yorker-Eight					NASH					Sedan Coupe	1484	111	1595	3460
Coupe, 2d., 3p.	1973	108	2081	3837	600 Series					Sedan, 4d.	1532	113	1645	3520
Sedan, 2d.	2048	112	2160	3932	Brougham, 2d.	1316	99	1415	2731	Station Wagon, Std.	2137	145	2282	
Sedan, 4d.	2073	113	2186	3987	Slip, Sedan, 4d.	1321	99	1420	2826	Station Wagon, DeLuxe	2211	148	2359	3795
Convertible Coupe	2323	126	2449	4132	Trunk Sedan, 4d.	1365	99	1464	2786	STUDEBAKER—1948				
Town & Country-8					Ambassador					Champion DeLuxe				
Sedan, 4d.	2496	136	2632	4300	Brougham, 2d.	1632	119	1751	3312	Coupe, 3p.			1446	2600
Convertible Coupe	2873	155	3028	4332	Slip, Sedan, 4d.	1648	119	1767	3412	Sedan, 2d.			1514	2685
Crown Imperial-8					Trunk Sedan, 4d.	1690	119	1809	3387	Coupe, 5p.			1540	2670
Sedan, 8p.	3905	207	4112	4810	Suburban Sedan, 4d.	2086	141	2227	3522	Sedan, 4d.			1548	2735
Limousine, 8p.	4005	212	4217	4875						Champ. Regal DeLuxe				
CROSLLEY					OLDSMOBILE					Coupe, 3p.			1519	2620
Sedan, 2d.	888			1115	Series 66-Six					Sedan, 2d.			1588	2710
Convertible	949			1110	Club Coupe	1385	103	1488	3316	Coupe, 5p.			1614	2690
					Club Sedan, 2d.	1410	103	1513	3323	Sedan, 4d.			1619	2760
DE SOTO					Sedan, 4d.	1450	106	1556	3356	Convertible			1970	2875
DeLuxe					Convertible Coupe	1725	120	1845	3611	Commander-DeLuxe				
Coupe, 2d., 3p.	1451	80	1531	3303	Station Wagon	2305	151	2458	3770	Coupe, 3p.			1751	3140
Sedan, 2d.	1516	84	1600	3398	Series 76-Six					Sedan, 2d.			1819	3230
Club Coupe	1541	85	1626	3393	Std. Club Sedan, 2d.	1475	109	1584	3495	Coupe, 5p.			1845	3210
Sedan, 4d.	1551	86	1637	3428	Std. Sedan, 4d.	1545	114	1659	3523	Sedan, 4d.			1851	3265
Custom					DeLuxe Club Sedan, 2d.	1590	115	1705	3515	Comm. Regal DeLuxe				
Sedan, 2d.	1581	87	1668	3423	DeLuxe Sedan, 4d.	1655	118	1773	3590	Coupe, 3p.			1872	3155
Club Coupe, 2d.	1591	88	1679	3378	Series 68-Eight					Sedan, 2d.			1940	3245
Sedan, 4d.	1601	88	1689	3433	Club Coupe	1440	106	1546	3446	Coupe, 5p.			1966	3225
Convertible Coupe, 2d.	1891	104	1995	3616	Club Sedan, 2d.	1465	107	1572	3453	Sedan, 4d.			1972	3280
Sedan, 8p.	1983	109	2092	3837	Sedan, 4d.	1505	109	1614	3486	Land Cruiser			2143	3340
Limousine, 8p.	2103	115	2218	3995	Convertible Coupe	1780	123	1903						

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Current Engine and Tune-up Specifications

MAKE AND MODEL	ENGINE					Spark Plug Make and Type	Rings		VALVES										IGNITION				TUNE-UP DATA			FRONT AXLE			
	Wheelbase (In.)	No. of Cylinders, Bore and Stroke	Taxable Hhp.	Piston Displacement (Cu. In.)	Maximum Brake Hhp. (with Bare Engine)		Compression Ratio	Cranking Speed (Lbs.) at Specified R.P.M.	No. and Width Compression	No. and Width	Seat Angle	Stem Diameter (In.)	Operating Tapet Clearance		Inlet Valve Timing	Timing		Breaker Point Gap	Cam Angle (Deg.)	Spark Plug Gap	Timing		Caster (Deg.)	Camber (Deg.)	Toe-in (In.)	King Pin Inclination (Deg.)			
													Inlet	Exhaust		Deg. Inlet Before or After TC	Timing Marks Located				Spark Occurs TC	Timing Marks Located							
Buick Eight, 40	121	8-3 1/4x4 1/2	30.6	248.0	110-3600	6.3	112	2- 1/2	2- 1/2	45	.372	.015H	.015H	.015	13BT	None	.015	.015	.025	31	.025	4BT	Fly	A	5 1/2	13	0 to 1/8	4 1/2	
Buick Eight, 50	124	8-3 1/4x4 1/2	30.6	248.0	110-3600	6.3	112	2- 1/2	2- 1/2	45	.371	.015H	.015H	.015	13BT	None	.015	.015	.025	31	.025	4BT	Fly	A	5 1/2	13	0 to 1/8	4 1/2	
Buick Eight, 70	129	8-3 1/4x4 1/2	37.8	320.2	144-3600	6.6	114	2- 3/8	2- 3/8	45	.372	.015H	.015H	.015	14BT	None	.015	.015	.025	31	.025	6BT	Fly	A	7 1/2	16 1/2	0 to 1/8	4 1/2	
Cadillac Eight, 61, 62, 60	(a)	8-3 1/2x4 1/2	39.2	346.0	150-3600	7.2	100	2- 1/2	2- 1/2	45	.342	HA	HA	HA	TC	VD	.015	.015	.030	31	.030	5BT	VD	A	6 1/2	25	N 1/2 to N 2 1/2	5° 51'	
Cadillac Eight, 75	136	8-3 1/2x4 1/2	39.2	346.0	150-3600	7.2	100	2- 1/2	2- 1/2	45	.342	HA	HA	HA	TC	VD	.015	.015	.030	31	.030	5BT	VD	A	6 1/2	25	N 1/2 to N 2 1/2	5° 51'	
Chevrolet Six	116	6-3 1/2x3 1/2	29.4	216.5	90-3300	6.5	123	1- 1/8	2- 1/2	30	.341	.006H	.013H	.008	3BT	Fly	.018	.018	.040	39	.040	5BT	Fly	A	5	15	0=1/2	4 1/2 to 1/2	
Chrysler Six, C-38	121 1/2	6-3 1/2x4 1/2	28.4	250.6	114-3600	6.6	125	2- 1/2	2- 1/2	45	.340	.008H	.010H	.014	12BT	VD	.020	.020	.025	34 1/2	.025	2AT	VD	A	5	17	N 1 to +1	4 1/2 to 6	
Chrysler Six, C-39	127 1/2	6-3 1/2x4 1/2	33.8	323.5	135-3400	6.7	125	2- 1/2	2- 1/2	45	.325	.008H	.010H	.011	12BT	VD	.018	.018	.025	27	.025	2AT	VD	A	6	26	N 1 to +1	4 1/2 to 6	
Crosley Four, CC-46	80	4-2 1/2x2 1/2	10.0	44.0	26.5-5400*	7.5	135	2- 1/4	2- 1/4	45	.312	.006C	.006C	.....	5BT	None	.020	.020	.46	.025	.025	12BT	Fly	B	3	5	8 1/2	8 1/2
De Soto Six, S-11	121 1/2	6-3 1/2x4 1/2	28.3	236.6	109-3600	6.6	125	2- 1/2	2- 1/2	45	.340	.008H	.010H	.014	12BT	VD	.020	.020	.34 1/2	.025	.025	TC	VD	A	5	17	N 1 to +1	4 1/2 to 6	
Dodge Six, D-24	119 1/2	6-3 1/2x4 1/2	25.3	230.2	102-3600	6.7	120	2- 1/2	2- 1/2	45	.340	.008H	.010H	.014	12BT	VD	.020	.020	.34 1/2	.025	.025	2AT	VD	A	5	15	N 1 to +1	4 1/2 to 6	
Ford Six, 60A	114	6-3 3/4x4 1/2	26.1	226.0	90-3300	6.7	120	2- 1/2	2- 1/2	45	.310	.013C	.015C	.015	5BT	TC	.015	.015	.025	35	.025	18T	.....	A	5	14 1/2	8 1/2 to 8	8
Ford Eight, 60A	114	8-3 1/2x3 1/2	32.5	239.4	100-3600	6.7	160 (b)	2- 1/2	2- 1/2	45	.311	.011C	.015C	.015	TC	DH	.020	.017	.025	30 1/2	.032	TC	.....	A	5	22	5 1/2 to 8	8
Frazer Six, F-47	123 1/2	6-3 1/2x4 1/2	26.3	226.0	100-3600	7.3	.....	2- 1/2	2- 1/2	30	.341	.010C	.014C	.010	10BT	FVD	.010	.010	.38	.032	.032	.....	FVD	A	5	15	0 to 1/2	5 1/2 to 6
Hudson Six, 51-52	121	6-3 1/2x4 1/2	21.6	212.0	102-4000*	6.5	120	2- 1/2	2- 1/2	45	.341	.010H	.012H	.....	10 1/2 BT	Fly	.020	.020	.34	.032	.032	TC	Fly	A	4 1/2	13	0=1/2	3° 36'
Hudson Eight, 53-54	121	8-3 3/4x4 1/2	28.8	254.0	128-4200*	6.5	119	2- 1/2	2- 1/2	45	.341	.008H	.008H	.....	10 1/2 BT	Fly	.017	.017	.30 1/2	.032	.032	TC	Fly	A	7	18	0=1/2	3° 36'
Kaiser Six, K-100	123 1/2	6-3 1/2x4 1/2	26.3	226.2	100-3600	7.3	.....	2- 1/2	2- 1/2	30	.341	.010C	.014C	.010	10BT	FVD	.020	.020	.36	.032	.032	TC	FVD	A	5	15	0 to 1/2	5 1/2 to 6
Lincoln Twelve, 66H	125	12-2 1/2x3 1/2	41.4	305.0	130-3600	7.2	167 (b)	2- 1/2	2- 1/2	45	.311	HA	HA	HA	10.4 BT	TG	.014	.014	.35	.027	.027	2BT	None	A	5	27	4	1/2 to 1/2	4
Mercury Eight, 69M	118	8-3 1/2x3 1/2	32.5	239.4	100-3600	6.7	160 (b)	2- 1/2	2- 1/2	45	.311	.011C	.015C	.015	TC	DH	.015	.015	.35	.025	.025	4BT	A	5	22	7.2	1	1/2
Nash Six, 4640	112	6-3 1/2x3 1/2	23.4	172.6	82-3800	7.1	120	2- 1/2	2- 1/2	44	.341	.015	.018	.018	6BT	TC	.020	.020	.35	.025	.025	TC	VD	A	6	14	1/2 to 1/2	7 1/2	
Nash Six, 4660	121	6-3 1/2x3 1/2	27.3	234.8	112-3400	6.8	125	2- 1/2	2- 1/2	45	.372	.015	.018	.018	24 1/2 BT	.....	.....	.....	.....	.025	.025	4BT	VD	A	6	17	0 to N 1/2	4 1/2
Oldsmobile Six	125	6-3 1/2x4 1/2	29.4	238.1	100-3400	6.5	115	2- 1/2	2- 1/2	30	.342	.008H	.011H	.012	TC	Fly	.020	.020	.35	.040	.040	TC	Fly	A	5	18 1/2	0 to N 1/2	4° 51' 10"	
Oldsmobile Eight	125	8-3 1/2x3 1/2	33.8	257.1	110-3600	6.5	100	2- 1/2	2- 1/2	30	.342	.008H	.011H	.012	TC	.....	.015	.015	.31	.030	.030	2BT	Fly	A	6	20 1/2	0 to N 1/2	4° 51' 10"
Packard Eight & Del. 8	120	8-3 1/2x3 1/2	39.2	288.0	130-3600	7.0	.....	2- 1/2	2- 1/2	45	.342	.007H	.010H	.012	10BT	.....	.015	.015	.028	.028	.028	6BT	.....	8	18	N 1=1/2	0 to 1/2	5° 50'
Packard Super Eight	(m)	8-3 1/2x4 1/2	39.2	327.0	145-3600	7.0	.....	2- 1/2	2- 1/2	45	.342	.007H	.010H	.012	10BT	.....	.015	.015	.028	.028	.028	6BT	.....	8	20	N 1=1/2	0 to 1/2	5° 50'
Packard Custom Eight	(n)	8-3 1/2x4 1/2	39.2	356.0	160-3600	7.0	.....	2- 1/2	2- 1/2	45	.342	AA	AA	.012	4BT	.....	.015	.015	.028	.028	.028	6BT	.....	7	20	N 2=1/2	0 to 1/2	5° 50'
Plymouth Six, P-15	117	6-3 1/2x4 1/2	25.3	217.8	95-3600	6.6	115	2- 1/2	2- 1/2	45	.340	.008H	.010H	.014	12BT	VD	.020	.020	.34 1/2	.025	.025	TC	VD	A	5	15	N 1 to +1	4 1/2 to 6	
Pontiac Six, 1946-25, 26	(f)	6-3 1/2x4 1/2	30.4	239.2	93-3400	6.5	160 1/4	2- 1/2	2- 1/2	30	.312	.011H	.011H	.011	5BT	CC	.020	.020	.37	.023	.023	2BT	Fly	.....	5	18	N 1/2 to N 1	4 1/2 to 6 1/2
Pontiac Eight, 1946-27, 28	(f)	8-3 1/2x3 1/2	33.8	248.9	107-3700	6.5	158 1/4	2- 1/2	2- 1/2	30	.312	.011H	.011H	.011	5BT	CC	.020	.020	.37	.023	.023	2BT	Fly	.....	5	19 1/2	N 1/2 to N 1	4 1/2 to 6 1/2
Studebaker 1947-7G	.....	6-3 1/2x4 1/2	21.6	169.6	80-4000	6.5	105	2- 1/2	2- 1/2	45	.312	.016C	.016C	.020	15BT	FVD	.020	.020	.35	.022	.022	2BT	FVD	A	6	13	0 to +1	5 1/2
Studebaker 1947-15A	.....	6-3 1/2x4 1/2	26.3	226.0	94-3600	6.5	105	2- 1/2	2- 1/2	45	.312	.016C	.016C	.020	15BT	FVD	.020	.020	.35	.022	.022	(h)	FVD	A	6	13	0 to +1	5 1/2
Willis Jeep	80	4-3 1/2x4 1/2	15.6	134.2	60-4000	6.5	110	2- 1/2	2- 1/2	45	.373	.014	.014	.014	9BT020	.020	.41	.030	.030	5BT	A	4	11	3	1 1/2 to 1 1/2	7 1/2
Willis 683	104	6-3 1/2x3 1/2	21.6	148.5	72-4000	6.4	110	2- 1/2	2- 1/2	45	.341	.014	.014	.014	9BT020	.020	.41	.030	.030	5BT	A	4	12	1	1 1/2 to 1 1/2	8

• With standard accessories.
 *—At 1000 RPM
 (a)—Model 61—128 in.; Model 62—129 in.; Model 60—133 in.; Model 60—133 in.
 A—Above (Rods removed from)
 BT—Before Top Center
 (c)—Upper ring .1875 in.; lower ring .15625 in.
 AC—AC Spark Plug Division
 AL—The Electric Auto-Lite Corp.
 AT—After Top Center
 (b)—At 2400 RPM
 B—Below (Rods removed from)
 BT—Before Top Center
 (c)—Upper ring .1875 in.; lower ring .15625 in.
 C—Cold
 CC—Crankshaft and Camshaft Sprockets
 Ch—Champion Spark Plug Co.
 DH—Distributor Housing
 (g)—Ring No. 1—.093 in.; Ring No. 2—.123 in.
 (h)—.75 in. Before Top Center
 H—Hot
 HA—Hydramatic
 FVD—Flywheel vibration damper
 FV—Flywheel
 FLY—Flywheel
 (f)—Models 25 and 27—119 in.; Models 26 and 28—122 in.
 (i)—No. 1—.063; No. 2—.1235
 (m)—Models 2202 and 2232—120 in.; Model 2222—141 in.
 (n)—Models 2206 and 2233—127 in.; Model 2226—145 in.
 N—Negative
 TC—Top Center
 TG—Timing Gears
 VD—Vibration Damper

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7 Complete Gasoline Strainer packages (containing all necessary fittings) cover all passenger car and light truck installations.

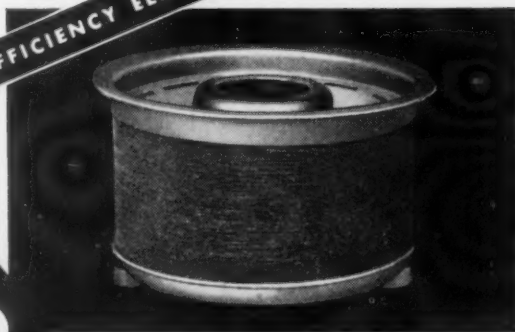


1 Additional Strainer package (containing all but special fittings) covers all other engine installations.

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DECEMBER, 1947

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(n)—Models 2206 and 2233—12 1/2 in.; Model 2226—14 1/2 in.

(b)—Before Top Center
H—Hox
HA—Hydramatic

(e)—Ring No. 1—0.093 in.; Ring No. 2—0.123 in.

(e)—Upper ring .1875 in.; lower ring .1625 in.

B—Below (Rods removed from)
BT—Before Top Center

A—Above (Rods removed from)
A—Automatic Adjustment

AGE

to overcome this, has arranged the front suspension cross member for easy dis-assembly. In practice, the front end of the car is raised and the cross member fastenings loosened. Two long bolts, part of the tool equipment for this job, are inserted. The cross member bolts are then removed and the suspension assembly remains held in place by

the special long bolts. By loosening the nuts, the action of the chassis springs raises the car far enough for the pan to be removed without difficulty.

Hudson continues its Drive-Master as optional equipment, the variety of drive arrangements being at the driver's choice. First is the standard assembly, consisting of a

conventional transmission and clutch. This standard transmission can be supplemented with a semi-automatic shifting arrangement by specifying the Vacumotive, vacuum-operated clutch which permits manual gear-shifting without clutch pedal operation. Overdrive is available with either the standard or vacuum-operated c-l-u-t-c-h unit.

When specifying the Drive-Master, the owner gets the complete package, consisting of the Vacumotive clutch in combination with the vacuum-electric transmission control, thus giving the following combinations: Completely automatic drive without use of either clutch pedal or gear shift lever; Vacumotive—manual gear shifting without clutch pedal operation; and conventional drive—manual shifting with clutch pedal operation. Choice of drive is made by turning the control lever on the instrument panel to the proper position.

Hudson's unique brake system—Bendix servo-action hydraulics in combination with a reserve mechanical system—is still standard equipment. The new models have 11-in. drums on all wheels. However, the lining is wider on the front wheels and the cylinders are larger, to provide correct braking ratio. The master cylinder is now mounted directly behind the pedal to simplify the linkage.

The steering ratio has been increased to 20.4 to 1 to lessen steering effort. A new Gemmer three-tooth worm and roller mechanism

(Continued on page 74)

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you have a
Snap-on

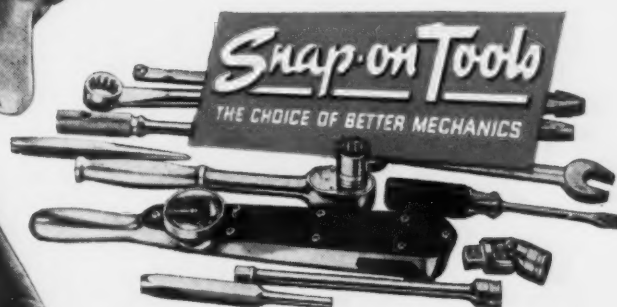
Snap-on's Blue-Point **VALVE COMPRESSORS** remove the stiffest valve springs easily . . . safely

Here is one of the most practical lifters on the market today. Universal in its scope, this valve spring compressor works efficiently on many different makes of cars.

Check these important features: It's fast and easy to use because the handle is in the most convenient place for simple, downward lever action . . . it's light in weight . . . and it has stronger, slimmer, channel-formed, adjustable jaws for all types of springs. In addition, the handle locks at any position by use of the sliding ring on the lower part of the frame.

For easy, safe work on the stiffest valve springs, ask the Snap-on man for the Blue-Point, "U"-type valve lifter.

SNAP-ON TOOLS CORPORATION
8036-L 28th AVE. KENOSHA, WISCONSIN
International Division: Kenosha, Wis., U.S.A.



SLIM!

STRONG!

SAFE!

1948 Hudson (Continued from page 72)

is employed, the steering column shaft being ball bearing mounted. The Center-Point steering linkage is continued.

The Monobilt body structure has an integral system of framing with 8 cross members welded to 4 longitudinal members. The outside rails are carried at the lower edges of the side panels, actually enclosing

the rear wheels. The vertical members extend upward from the outside rails to the roof, the side and roof panels being welded directly to these structural members. Jack pads are fitted to the frame, adjacent to the front and rear bumpers.

The Super-Eights and Commodore Sixes are available in 3 and 6-passenger coupes or sedans. The

Super-Sixes are available in 3 or 6-passenger coupes, broughams, sedans and convertible broughams, while the Commodore Eights are available in 6-passenger coupes, sedans and convertible broughams.

Rodgers Retires from ATA Presidency

The American Trucking Association, Inc., closed a record-breaking convention here yesterday during which it elected a new president for the first time in the 14-year history, paid high tribute to Ted V. Rodgers of Scranton, Pa., who retired from the presidency at his own request, and registered more than 1500 delegates—almost double the registration of any previous year. Total attendance went well over the 2000 mark.

The Board of Directors cast a unanimous ballot for E. J. Buhner, president of Silver Fleet Motor Express, Inc., Louisville, Ky., for the industry's top office as President of ATA.

The Board also elected H. D. Horton of Associated Transport, Inc., Charlotte, N. C., first vice president; Henry E. English, Sproles-Red Ball Lines, Inc., Dallas, Tex., second vice-president; C. J. Williams, Hillside Transit Company, Milwaukee, Wis., third vice-president; Leland James, Consolidated Freightways, Inc., Portland, Ore., fourth vice-president; Chester G. Moore, Central Motor Freight Association, Chicago, secretary, and Charles P. Clark, Columbia Terminals Company, St. Louis, treasurer.



You've got to deliver the goods if you want to stay on top year after year. Take good old St. Nick for example—there's a fellow whose popularity never diminishes. Yes, and take Warner Cooling System Products—still the standard of cooling system protection after more than 25 years!

- 1 WARNER LIQUID SOLDER (NON-METALLIC)**
Deposits tiny fibers to repair leaks anywhere in the cooling system.
- 2 WARNER RADIATOR CLEANER**
Thoroughly cleans the cooling system of rust, oil muck and grease.
- 3 WARNER SERVICE CLEANER**
For trucks, tractors and badly neglected passenger car cooling systems.
- 4 WARNER COOLING SYSTEM PROTECTOR**
Prevents accumulation of rust that leads to clogging and overheating.



NATIONALLY ADVERTISED
Millions of motorists see Warner Cooling System Products advertised regularly in the pages of Saturday Evening Post and Collier's . . . millions are prospects for Warner Cooling System Service. Get your share of this extra-profit business.

WARNER-PATTERSON COMPANY • 920 S. MICHIGAN AVENUE • CHICAGO 5, ILLINOIS



"Why no, Henry doesn't mind if I take the car. Why do you ask?"



New Delco Auto Radio Hailed as "Sensational!" Winning Popularity—and Sales—Everywhere!

No wonder people are enthusiastic—Delco has pioneered an entirely NEW electro-mechanical device known as the ELECTRO-TUNER which tunes in the stations, one by one, *automatically*, at the touch of a finger-tip!

With this new development it is no longer necessary to pre-

set for stations . . . it is no longer necessary to employ *push-button* or even *manual* tuning!

Nationally Advertised

And don't think we're not telling the world about it—the news of this amazing new eight-tube, super-heterodyne set with special all-tone speaker is being broadcast through the pages of the *Saturday Evening Post* and *Collier's*.

Fits all cars and trucks

The set is easy to install, easy to transfer from one car to another. And, because it fits all

cars and trucks, every vehicle owner is a prospect!

Get Delco—get going!

Remember—the ELECTRO-TUNER is a development that is so far ahead of the field that it makes obsolete even the very latest types of push-bar tuning! For complete information contact the nearest United Motors distributor or zone office.

DELCO RADIO

A GENERAL MOTORS PRODUCT

Delco radios are distributed nationally by United Motors Service. See your United Motors distributor about the Delco radio line.



THIS DOES IT!



This is the magic "trigger tube" which sets up a separate sensitivity field and traps the stations, one by one!

Puritan Traveling Brake Clinic to Cover Country

How the hydraulic brake system operates, where troubles are likely to occur and how they can be corrected are being shown to repairmen through a traveling Hydraulic Brake Clinic sponsored by the Puritan Company, Inc., Rochester, N. Y., and local NAPA jobbers. The technical details of the automotive hydraulic brake system are made

easily understandable through the use of a glass model system. This model consists of accurate reproduction of master and wheel cylinders in glass, with standard pistons, cups and springs. Actuated by an electrically driven cam, the complete workings of a hydraulic brake system can be seen clearly through the whole cycle from application to release of a brake.

Utilizing the glass model and other equipment for illustration,



Puritan's Technical Representative, Bernard A. Bannon, discusses the principles of hydraulic and relates these to the automotive brakes. The lecture which covers causes of troubles and proper preventive maintenance, ends in an open forum of audience participation and demonstration of Puritan Hydraulic Brake Fluids, Hydraulic Brake Flushing Fluid, Shock Absorber Oil and "Caska-Seals" by the Puritan Field Representative complete the program.

Because of the enthusiastic reception given these clinics, the company plans to continue them as a permanent part of its educational program, ultimately reaching all parts of the country.

Ward Names Kimball Pontiac Ad Chief

L. W. Ward, general sales manager of Pontiac Motor Division of General Motors Corporation, has announced the appointment of B. B. "Cap" Kimball as advertising manager of the Division.

The appointment climaxes thirty years of employment at Pontiac by Mr. Kimball, the majority of which has been spent in the Division's advertising department. It is effective immediately.

"Mr. Kimball has what he believes to be the longest continuous service record of any automobile advertising executive," Mr. Ward said. "He has been with the Division almost from its entry into the automobile field, and he has seen its advertising appropriation grow from a few thousands of dollars to many millions. His knowledge of the particular problems of automotive advertising and goodwill is deep and fundamental. His choice as advertising manager was a popular one both within and without the Pontiac organization."

Mr. Kimball succeeds P. R. Warmee, who has resigned to become a Pontiac dealer at Van Nuys, Cal.

**For Every Automotive Need . . .
One Dependable Source of Supply**

LINE UP WITH LION



- SUPERIOR QUALITY
- OUTSTANDING PRICES
- NATIONALLY ADVERTISED

**MOST COMPLETE
COVERAGE IN THE
AUTOMOTIVE FIELD**




**UNIFORM
BOXING**

LION AUTO PARTS AND MFG. CO.
1920 SOUTH MICHIGAN AVE. CHICAGO 16, ILLINOIS

get on
the
profit side
of the
road



Arrow No. A-400 Fog Light with
Universal Malleable-Iron Mounting
Bracket

with **ARROW FOG LIGHTS**

HERE'S A FOG LIGHT that has everything . . . eye-appeal as well as see-appeal . . . that's built to do a job . . . that's a natural to build sales for you.

Modern sealed-beam unit—the safest and most powerful automotive lighting yet developed. Specially designed lens gives the most effective light under fog conditions. The narrow, horizontal beam that is fully deflected on the road eliminates glare—giving drivers the feature they most desire in a fog light.

The Arrow Sealed-Beam Fog Light is proof against dust and moisture. No dimming, ever. No separate bulb to blow out. Handsomely finished chrome shell is triple-plated to give extra protection against road-damage. Available singly or in pairs, with 4" clear or amber lens, and universal mounting bracket that fits later-model cars as well as most other cars and trucks.

Order now for the bad weather ahead.



Arrow No. 500-F Fog
Light—5" Lens with
Malleable-Iron Bumper
Bracket to Fit Practically
All Pre-1946 Cars

ARROW SAFETY DEVICE COMPANY
MOUNT HOLLY, NEW JERSEY
SAFETY AFTER DARK

Chrysler Steering . . . (Continued from page 38)

this occurs, the body bolts should first be tightened, then the steering gear loosened at frame and dash bracket and allowed to seek its natural position. The steering gear is then tightened to the frame and then to the dash bracket.

End play of the steering arm shaft and the mesh of the roller tooth with the steering worm should be checked next. It will be

necessary either to put the car on a lift or to jack it up and remove the front left wheel to do this job. The Pitman arm-tie rod assembly is such on the Chrysler cars that it is not practical to disconnect them. The best procedure, therefore, is to remove the Pitman arm from the steering arm shaft, leaving it connected to the tie rods, and put another Pitman arm on the shaft.

This replacement Pitman arm can then be used purely for testing.

The steering wheel is turned to mid-position. This is done by turning the wheel from extreme left to extreme right, counting the number of turns required. Turning the wheel back one-half the total number of turns will then bring it to the mid-point. Moving the test Pitman arm back and forth will determine whether or not there is any backlash. There should be none at all, but if there should prove to be more than 1/32 in. free movement at the lower end of the arm, the mesh of the roller tooth and worm must be adjusted.

This is done by removing the roller shaft adjustment screw lock nut (2, Fig. 1) and sliding off the lock plate (3, Fig. 1) far enough to clear the lock boss of the roller shaft cover. The roller shaft adjustment screw (1, Fig. 1) is then tightened just enough to eliminate all free play between roller and worm without binding. The lock plate is slid back in position and locked and the lock nut is replaced and tightened. Finally, the steering is re-checked for any inaccuracies in adjustment.

If removal of the steering gear assembly is necessary, the horn ring, horn wire and steering wheel must first be removed. Chilton Flat Rate time on removal and replacement is approximately 3 1/2 hours.

The horn wire at the lower end
(Continued on page 80)



**The best way ...
the easiest way ...
the *haskins*
way!**

The best job done with the least trouble . . . that's what you'll get with Haskins Flexible Shaft Equipment!

For body and fender work, sanding, wire brushing—and a host of other uses—you'll find Haskins machines meeting all your requirements for precision and speed.

Durable? Certainly. Many Haskins tools are still pleasing hard-to-please shop men after 20 years of service. Get the details on how Haskins machines helped them . . . how Haskins machines can help you. Write for the Haskins Automotive Equipment Bulletin. R. G. Haskins Co., 603 S. Washtenaw Street, Chicago 12, Illinois.



HASKINS RA-5 Direct Drive Equipment; 1/2 HP. 3450 R. P. M.; bench-height pedestal, 360° swing.



haskins
FLEXIBLE SHAFT EQUIPMENT



"Nothing. I'm just casing the joint."

Where tomorrow's motor car will show up soon



This page is an adaptation of a two-page, full-color advertisement appearing in *Collier's* for November 29, and the *Saturday Evening Post* for December 6.

OVER 3,000 Hudson distributors and dealers are getting ready to display a great new car!

The motor car you've been told was years away is coming soon! Hudson is building it now!

Just imagine the lowest full-sized car on the highway, with more inside headroom than any other automobile built today . . . a car you step *down* into as you enter, not *up* on . . . a car that maintains road clearance.

Imagine a car built so snugly low that a ride gives you a feeling of safe, serene, smooth going more pleasant than anything you've experienced before.

All of this only hints at the exciting new advantages offered by the motor car of tomorrow. Its arrival will mark a great day for the public, and for the Hudson dealers whose showrooms will set the stage for a first view of the *newest* new car in the world!

Every one of these distributors and dealers is well

located and thoroughly equipped to serve an ever-increasing number of Hudson owners. Each dealer maintains a balanced stock of genuine Hudson parts, and is further supported by one of 166 Hudson *strategically located* Distributor Parts Depots.

For the biggest news in the motor-car world . . . watch the Hudson showrooms near you!



Hudson

HUDSON MOTOR CAR COMPANY • DETROIT 14, MICHIGAN

Chrysler Steering . . . (Continued from page 78)

of the steering column is disconnected. The four screws on the underside of the horn ring and cover are removed. The screws are then removed from the top side of the retainer (if present) and the ring and retainer lifted off. The screws which hold the contact plate and spring retainer to the steering wheel hub are removed. Finally,

the wire is pulled out of the steering tube.

The steering wheel itself is removed by taking off the nut which holds it to the steering tube, then attaching a puller in the threaded holes in the hub.

After the horn and the steering wheel have been removed, the screws holding the steering bracket

to the dash are removed. The direction signal control wires are disconnected at the dash (two of these wires pull out of connectors, the third is unscrewed from the flasher unit terminal). The cover plate is then removed from the bottom of the direction signal control housing and the clamp screw removed from the inside of the housing. This allows the control unit to be removed directly while pulling the wires up through the tube. The rubber draft pad is then unscrewed from the floor boards and slid up the tube out of the way.

The nut is removed from the lower end of the gearshift rod and the rod and shift lever are pulled out. The brake cable clamp and selector lever are removed from the steering column. The cap screws which hold the steering gear housing to the frame are removed, as is the left engine splash pan. The steering gear assembly can then be removed by lowering the housing out through the opening between the engine and the frame.

When the steering gear housing has been removed, it is drained of lubricant and fastened in a bench vise, securing it at the frame bracket flange, with the steering column jacket horizontal. The roller tooth shaft adjusting lock nut and plate and cover cap screws are removed. The roller tooth shaft and shaft cover are then removed from the housing, being careful to avoid damaging the shaft oil seal.

(Continued on page 82)

**LARGEST
SELLING MICROMETERS
IN THE
AUTOMOTIVE FIELD
THROUGHOUT THE
WORLD!**



CENTRAL *Certified Accuracy* **MICROMETERS**



SET NO. 745 RL \$46.50
OUTSIDE MICROMETERS
Range 0 to 4 inches.
Complete with Ratchet Stops, Lock Nuts, Standard Test Gauges and DeLuxe Hinged Plush-Lined Case



SET NO. 808 \$12.00
INSIDE MICROMETERS
Range 1½ to 8 inches.
Complete with Extension Handle and DeLuxe Plush-Lined Case



WRITE FOR CATALOG NO. 17
The entire line of individual micrometers and sets fully illustrated.



CENTRAL
1907-1947
FOR NEARLY A
HALF CENTURY
SPECIALISTS
IN FINE
MICROMETERS
CERTIFIED ACCURACY

THE CENTRAL TOOL CO., CRANSTON 10, RHODE ISLAND



"Hey, Sis, you got one."



M O P A R

PARTS
AND
ACCESSORIES



"I've got millions of reasons for using 'em!"

"Here's what I'm getting at! You may not know it, but Chrysler Corporation actually invests millions of dollars in engineering and research every single year.

"And that research applies to MOPAR parts as well as to the vehicles for which they're engineered—Plymouth, Dodge, De Soto and Chrysler cars and Dodge 'Job-Rated' Trucks.

"When replacement parts get *that* kind of backing, mister, I'm: for them—all the way!

"That's why I buy and install MOPAR parts with confidence. I know they'll be made right. I know they'll fit right. And I know they'll work right. *Factory engineering and inspection sees to that!*

"All this adds up to easier, more satisfactory service work. Yes, sir, MOPAR parts sure help keep customers happy. You'll find that MOPAR parts are real business-getters, too!"

Where do you get MOPAR parts?



You can get MOPAR parts for Plymouth, Dodge, De Soto or Chrysler cars, and Dodge "Job-Rated" Trucks from dealers for these vehicles.

CHRYSLER CORPORATION — PARTS DIVISION
DETROIT 31, MICHIGAN



Factory Engineered and Inspected for.
PLYMOUTH • DODGE
DE SOTO • CHRYSLER CARS
DODGE "Job-Rated" TRUCKS

Chrysler Steering . . . (Continued from page 80)

The steering arm shaft bearing oil seal should be pulled out of the housing only if necessary. The cover and grease tube assembly are removed, with the shims, from the bottom of the housing. The steering column jacket clamp is then loosened and the jacket is pulled off the housing. Finally, the steering tube and worm assembly is with-

drawn through the bottom end of the housing and the steering arm shaft bushings (if necessary) with a suitable puller.

Before re-assembly, the inside of the housing, the worm, steering arm shaft and bearings should all be thoroughly cleaned and checked for wear. If the bushings have been removed, new ones should be

pressed into place. The rest of the assembly is accomplished by reversing the order of disassembly. No lubricant should be used until adjustments and assembly have been completed.

Ted Horn Again Wins Nat'l Big Car Crown

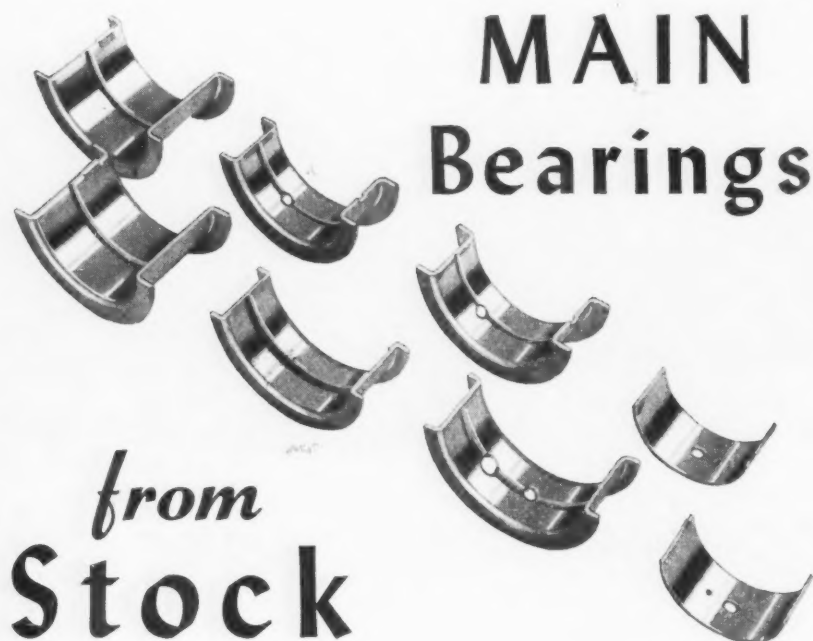
(Continued from page 56)

ed at Arlington Downs, Texas, on November 2nd. As late as August 24th, each driver had earned 1530 points; then followed the 100-miler at Springfield, Illinois where Horn picked up 160 points by finishing second. At the Dallas 100-miler, Horn took an early lead and won an additional 200 points for a grand total of 1890 and the AAA title.

D-18—Behr-Manning Trade-Built Repackaging Plan

Behr-Manning has announced a new trade-built repackaging plan, service packaging of coated abrasives, effective on shipments after January, 1948. Claimed by the manufacturers to provide new economy and convenience in the buying, selling, handling and use of coated abrasives, the new packaging plan includes: Decimal quantities instead of ream and quire counts; standard master packages; component resale packages; brand identification by colored labels; line identification by wrapper design.

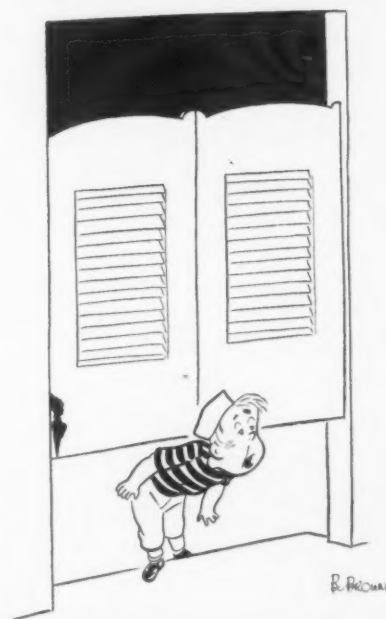
(For further information use coupon on p. 62)



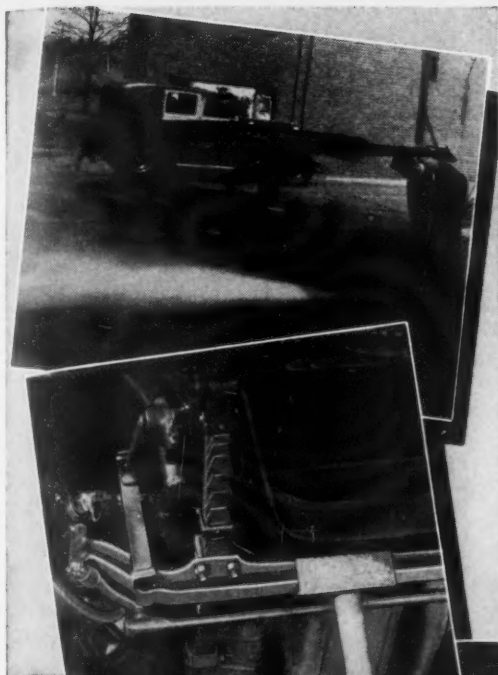
HERE IS GOOD NEWS! Johnson Bronze main, conrod and camshaft bearings . . . for all popular makes of cars and trucks can be secured *from stock*. This includes both standard and the usual range of undersizes. Every bearing is made to the same precise measurements and of the same top grade metals as original equipment. Why not check your needs now? We will ship your order the same day it is received.

The same excellent delivery is likewise available on starter and generator bushings; water pump and distributor bushings and all chassis bushings and bearings. Our new catalogue lists and describes a complete automotive bushing and bearing service. Write for a copy today.

JOHNSON SLEEVE BEARING **BRONZE HEADQUARTERS**
455 S. MILL STREET NEW CASTLE, PA.



"Pop, can I have your chaser?"

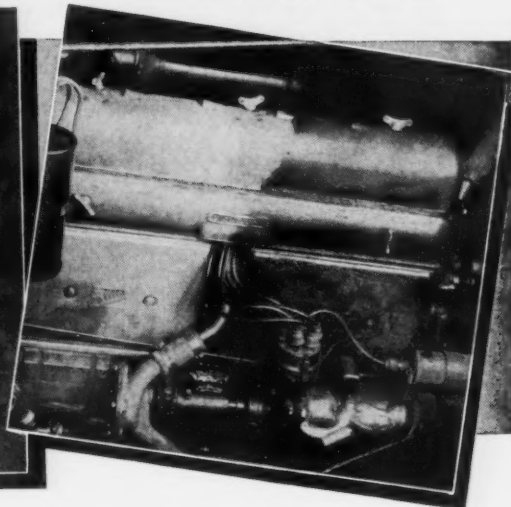
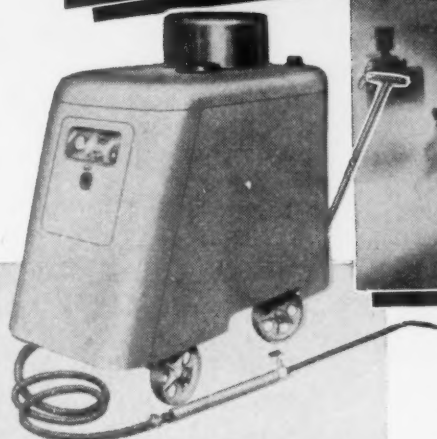


Let

HYPRESSURE Jenny STEAM CLEANER

Help You

- ✓ **GET MORE BUSINESS**
- ✓ **INCREASE YOUR PROFITS**
- ✓ **REDUCE YOUR OVERHEAD**



WITH HYPRESSURE JENNY YOU CAN CLEAN

- **Automobiles**
- **Buses**
- **Trucks**
- **Engines**
- **Chassis**
- **Parts**
- **Brake Rigging**
- **Springs**
- **Transmissions**
- **Radiators**
- **Pits**
- **Lifts**
- **Floors**
- **Walls**
- **Windows**
- etc., etc.

With Hypressure JENNY you can clean a car motor or chassis as "clean as a pin" in 10 to 15 minutes. The new business you'll get as a result of this super-quick service will pay for your JENNY in a few months. But that's not all. Hypressure JENNY Steam Cleaning frequently uncovers damaged and worn parts that need repair, or replacement, thus bringing you additional business and more profits. But Hypressure JENNY'S profit-making for you doesn't stop there. By steam cleaning *before* repairs you can cut repair time practically in half by saving up to 40% of your mechanics' time usually lost wiping dirt and grease from tools and machinery. And for reducing shop and garage maintenance expense, you'll find JENNY indispensable. One man using Hypressure JENNY can clean all types of shop equipment, grease racks, pits, runways, floors, walls, windows, skylights, etc., 8 to 10 times faster and better than by outmoded hand methods.

Hypressure JENNY Steam Cleaner is a sturdy, compact, portable unit easily moved from one cleaning job to another. It is safe . . . economical . . . and so easy to use that ordinary labor can operate it.

Ask your Automotive Jobber for complete information—or write direct for illustrated folder about Hypressure JENNY. There is no obligation.

HYPRESSURE JENNY DIVISION
HOMESTEAD VALVE MANUFACTURING COMPANY

P. O. BOX 95

CORAOPOLIS, PA.

Classified Ads (Continued from page 40)

parts of the paper your ad is competing every second with news and feature stories. That's not true on the classified pages. People are usually in a buying mood when they start reading the small classified ads. They're looking for something—it might be car repair work!—and it could be in your shop!

These small ads on the classified

pages will not, in most cases, bring any direct, tangible results. But they will more than pay for themselves by keeping your name in front of a vast, varied reading public.

Your advertising dollars pay off in the large ads—make your advertising pennies do their share in the classifieds.

Egan Appoints Wooldridge General Sales Manager

E. D. (Dan) Wooldridge has been appointed general sales manager of the H. B. Egan Manufacturing Co., Muskogee, Okla., manufacturer of



the Camel line of tube repair kits and accessories. Since 1945 Wooldridge has headed his own auto accessory distributing firm which he established. From 1942 to 1945 he was in the Office of Rubber Director of the War Production Board, and prior to that was sales manager for a large automotive jobber in North Carolina. In his new work he succeeds James A. Egan who is now general manager of the company.

Royden Sheeler Dies

Royden Sheeler, Eastern Sales Representative for American Hammered Piston Ring Company died recently. He had been with American Hammered since 1938 and was very well known throughout the trade in the East.



"Ed brought him back from Australia."

THOUGHTS FOR MERCHANDISERS

**THE LONGEST WALK
A CUSTOMER
EVER TAKES!**

...when he walks off your books dissatisfied, displeased and distressed. To make him a profitable customer again costs plenty. One of the sure steps you can take to safeguard good will and improve your service is to make full, proper use of time and labor saving air...let BRUNNER air compressors give you the assurance of adequate, dependable supply. Brunner's air compressor catalog is a step in the right direction.

Ask for it.

BRUNNER MANUFACTURING CO.
Utica 1, New York, U. S. A.

SINGLE AND TWO STAGE MODELS
1/4 HP. TO 10 HP.

BRUNNER
SINCE 1906

AIR
helps you serve better



Victor L. George, Dodge Dealer, Flint, Michigan

"THE LUCKIEST DAY of my life came when Dodge made me their dealer in Flint, Michigan—seventeen years ago.

"Here's a great town in the heart of agricultural Michigan, with plenty of huge industry within its city limits.

"This Dodge-Plymouth dealership gives me complete coverage of the low and medium priced passenger car markets, and the Dodge *Job-Rated* truck line meets 97% of all city and rural hauling requirements.

"So, as I look around me, I wouldn't trade my Dodge dealer agreement for anything else in the whole automobile business. Why? Because there's no other dealer agreement like it,—no other sales and service back-log and market so rich in opportunity."

• • •

DODGE • PLYMOUTH • DODGE "Job-Rated" TRUCKS

DODGE—DIVISION OF CHRYSLER CORPORATION
7900 JOS. CAMPAU, DETROIT 11, MICH.

Warner Brakes (Continued from page 41)

If the current at any one brake is low, a high resistance voltmeter should be attached across the two brake connections. On single wire systems the voltmeter should be connected between the brake terminal and the ground. If the voltmeter reading is less than the battery voltage, a check should be made for bad or dirty connections,

worn or frayed wires or a defective controller. If, on the other hand, the voltmeter reading is equal to or very slightly less than the battery voltage, it indicates that the trouble is elsewhere, possibly in the connections to the magnet. If these connections are clean and tight and the voltmeter reading is still low, the magnet will have to be replaced.

If, on the ammeter test, there is indicated a current draw higher than that shown on the chart, grounds or shorts may be present in the magnet connection. If none can be found, the magnet itself is probably shorted and should be replaced.

After the wheel magnets have been checked, the controller should be tested. This is done by connecting it in series with a low-reading ammeter. With the controller full "off", the reading should be zero. Then, with the controller full "on" the reading obtained should equal the total of the ammeter readings taken at the wheels. If the reading is higher than the total of all four wheels a check should be made for shorts or grounds in the wiring to the wheels.

The controller can be further tested by removing it and hooking it up with a 6-volt battery and a 21 cp light bulb. This will place the bulb and controller in series. With the controller off, the bulb should not light at all. As the handle is advanced, however, the lamp should glow and increase in ten steps until the handle is in the full on position. If trouble is still indicated, the controller contacts should be cleaned and straightened, or if necessary the controller should be returned to the factory for rebuilding.

The electro-magnet that actuates the wheel brake must be free not only to oscillate within a limited

(Continued on page 88)

ADS LIKE THESE

GIVE A FLYING LIFT TO WINTER *Sales*

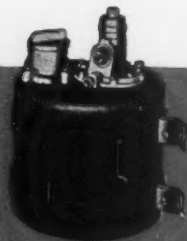
Now! . . . after a summer program of national advertising, MARVEL MYSTERY OIL carries on into your big winter season. In Collier's important November 1st Preventive Service Issue, a dramatic color ad tells millions of motorists about MARVEL for quick, battery-saving winter starts. Backed by the summer campaign, this compelling consumer message has the impact to keep MARVEL sales flying your way!

With colder weather coming on, MARVEL added to lube oil, gasoline and all gear greases carries a four-fold benefit. There's astounding low temperature flow to ease sub-zero starts, shifting and steering . . . high film strength to add vital motor-protecting toughness to thinner winter lubricants . . . amazing heat resistance to guarantee safe lubrication for sizzling top cylinder zones . . . and detergent action to prevent oil drag resistance. Add MARVEL's national advertising to that line-up of sales points, and you know what to do . . . stock NOW and be ready to catch those flying MARVEL sales! EMEROL MANUFACTURING COMPANY, Inc., 242 W. 69th St., New York 23, N. Y.

MARVEL MYSTERY OIL



MARVEL HI-REV—the rapid motor tune-up that swiftly dissolves gum and sludge. A shop stand-by for heavy duty de-sludging jobs.



The MARVEL INVEROL OILER—a compact, top application, auxiliary lubrication system to meter Marvel Mystery Oil to critical engine operating parts according to engine needs.



"Why can't you just walk home like other girls do?"

AN IMPORTANT ANNOUNCEMENT

BY

THOMAS A. EDISON

INCORPORATED

Two great automotive products—Edison Spark Plugs and Edison Batteries, together with Edison Magnetos—are now united under one great name.

The manufacture and sale of these and other automotive products formerly made and marketed by the Emark Division of Thomas A. Edison, Incorporated and by Edison-Splitdorf Corporation will now be continued by the newly formed Automotive Division of Thomas A. Edison, Incorporated, with headquarters at West Orange, New Jersey.

The new Automotive Division will work hand in hand with Edison Laboratories to develop and perfect automotive products to meet the ever-increasing demand of owners and manufacturers.

Batteries, for the time being, will be distributed only in the Eastern part of the United States, but the other products of the Automotive Division will continue to be distributed nationally. For you, this logical combination will mean better service than ever before. And it will give you a line of products which you can profitably sell with the guarantee of *Performance as Great as the Name*.

BATTERIES • SPARK PLUGS • MAGNETOS • GLOW PLUGS • IGNITERS • CONNECTORS



AUTOMOTIVE DIVISION
THOMAS A. EDISON, INCORPORATED
WEST ORANGE, NEW JERSEY

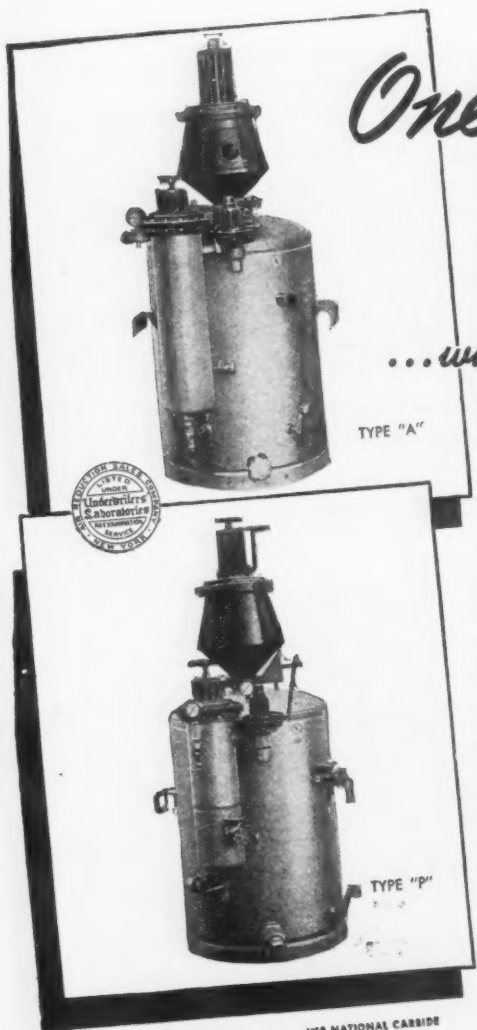
"YOU CAN ALWAYS RELY ON AN EDISON"

Warner Brakes (Continued from page 86)

arc, but to move in and out in relation to the armature disc as well. For this reason it is mounted on a bronze bearing surface on which it must move freely. Also, the springs that return the magnet to its central position must be carefully checked or the brake will not function properly. The face of the magnet must be smooth and should be

renewed if it is worn or scored. The armature disc must also be replaced if it is scored or worn thin, but it is normal for it to have grooves worn in it by the magnet poles.

On the single band type shoes, no adjustment is provided, the movement of the magnet compensating automatically for wear.



One of these

**Portable
Acetylene
Generators**

...will serve you better

STURDILY built, highly efficient, low in cost, Airco Portable Acetylene Generators are designed to supply sufficient gas for oxyacetylene welding or cutting.

Both models are practically identical in design, the principal differences being that Type "P", slightly higher priced, contains a carbide observation window in the hopper and a water circulating device.

Each has a built-in pressure control valve which can quickly be set to deliver and maintain the exact pressure required. There is no need for frequent readjustment of torch valves to compensate for variations in delivery pressure; the operator can devote all his attention to welding or cutting.

Airco Type "A" and Type "P" are made in 3 sizes, each approved for double-rated operation: 15-lb. size, 30 cu. ft. per hour; 30-lb. size, 60 cu. ft. per hour; 50-lb. size, 100 cu. ft. per hour.

For complete details, write for Catalog No. 30 to the nearest Airco field office or to Dept. MG, Air Reduction, General Offices: 60 East 42nd Street, New York 17, N. Y. In Texas: Magnolia Airco Gas Products Co., General Offices: Houston 1, Texas. Represented Internationally by Airco Export Corporation.

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Offices in All Principal Cities

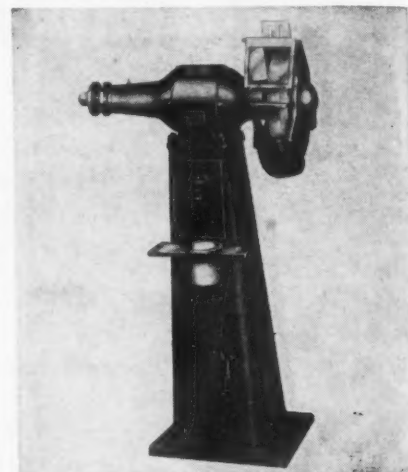


Portable
ACETYLENE GENERATORS

USE NATIONAL CARBIDE
FOR HIGHEST ACETYLENE YIELD

D-19—Bradford Tool Offers Grinders, Buffers

The Bradford Machine Tool Company is now producing a new line



of "Metalmaster" bench and pedestal type grinders and buffer-polishers, equipped with one horsepower, 110-220 volt, 50/60 cycle, single phase motors. Known as the "190" series, these Bradford tools are designed to meet job requirements of small shops, maintenance departments, garages, farms and shops having single phase electric power supply. Eleven tool models make up the "190" series.

(For further information use coupon on p. 62)

AAA Elects Officers At Washington Convention

(Continued from page 57)

training for high schools, the "Take It Easy" Traffic Safety campaign, the AAA National Pedestrian Protection Contest, School Safety Patrol Activities, and other educational and civic activities which aim at a reduction of traffic accidents on the country's streets and highways.

Ralph Thomas, Detroit, Mich., was re-elected secretary, and Corcoran Thom and Frederick P. H. Siddons, both of Washington, D. C., were re-elected treasurer and assistant treasurer, respectively.

Other national officers who will serve during the coming year include the following as vice-presidents: John A. Rupp, Allentown, Pa.; E. B. McDaniel, Portland, Ore.; Walter F. Hofheins, Buffalo, N. Y.; G. Leslie Hall, Norfolk, Va.; Glenn W. Stephens, Madison, Wis.; and United States Senator Owen Brewster, Dexter, Maine.



Take this with a grain of salt! But...

...YOU DO GET HIGHER PAINTING PROFITS THE M-S WAY

Eight Quick Reasons to Switch to Martin-Senour

- 1 Higher painting profits.
- 2 Exact color match to car maker's specifications.
- 3 Top quality, top durability, top beauty.
- 4 No time wasted mixing and matching.
- 5 Patented pour-top can prevents waste.
- 6 No comebacks, no headaches.
- 7 Easier to handle—jobs out on time.
- 8 Available everywhere... call your N.A. P.A. jobber.



Frankly, our cartoonist went too far when he heard about Martin-Senour's ready-mixed automotive finishes. We don't say you'll get rich! But you *do* get an exact color match to car maker's specifications. You *don't* waste time mixing or matching. And you *do* get the job *right* on first try. That means you paint more cars in less time, make higher profits with less effort . . . that you have more time and money to do the things you like. Here's how simple it is. Just check color, make and model in the handy M-S catalog . . . phone your NAPA jobber . . . get the finish you want . . . fast! Soon we hope to supply M-S automotive lacquer finishes in unlimited quantities.

MARTIN-SENOUR

2520 Quarry Street, Chicago 8, Illinois

eliminate the hood. According to this school of thought, the front seat can then be shoved well forward into the nose and highway deaths will immediately drop to zero. This would be fine . . . if it wasn't for the fact that even the most visibility-minded driver must have some place to put his and his passengers' legs where they won't

be cut off by the front wheels every time the steering wheel is turned. The designer, therefore, must either place the front seat *ahead* of the front wheels, a terrifying position in which to drive or from which to be hit, *above* the front wheels, not so good where there are low bridges, or *behind* the front wheels, far enough behind to give ample

leg room . . . which is where the seat is now placed with front engine placement! One solution of this problem of moving the driver farther forward was to sit him in the center, well forward of the passengers. This, however, was something less than cosy, and in America, a car that made necking difficult might well make sales impossible.

Actually, the hood can be sloped much more sharply than it is at the present time, since by no means all of the hood space is taken up with engine. The pancake engine, for instance, lends itself admirably to a more unobtrusive hood, while Fiat and Renault have found it satisfactory for years to put the radiator behind the block, materially lowering the hood and increasing visibility.

There can be no doubt that the rear engine car is quieter to those riding in it. Some time before the war this writer drove a Tatra V-8 for a considerable distance, through traffic and on the highway, and found that the complete isolation of the engine made for an uncanny sense of silent drifting. It also, of course, led, in this case, to a good deal of gear clashing, since the absence of engine sound made it almost impossible to judge engine speed. Perhaps a tachometer was needed on the dash. It is worth noting in this connection, that cars such as the Tatra have a very large amount of engine-control and gear-

(Continued on page 92)



WITH *Johnson*

ADJUSTABLE TAPPETS

for FORD V-8's and MERCURYS (85-100 H. P.)

You can't go wrong when you install **JOHNSON** Adjustable Tappets for Fords! You make more profit and gain more satisfied customers.

Designed and produced by "Tappet Specialists," suppliers of tappets of all kinds to America's leading engine builders, these tappets are easily and quickly adjusted without fitting of valves — with cylinder heads in place. Special spanners, included with each set of tappets, leave both hands free for quicker, yet more accurate adjustments, and the **JOHNSON** self-locking screw maintains this exact setting for many miles of smooth, quiet, full powered engine performance.

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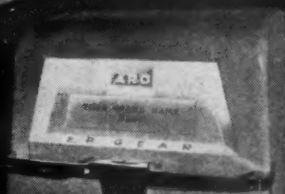
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"Tappets Are Our Business"



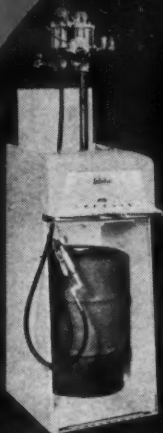
"I already walked the first quarter's worth. Now you take me the rest of the way."

MORE to help you PROFIT with ARO

Supreme LUBRICATORS



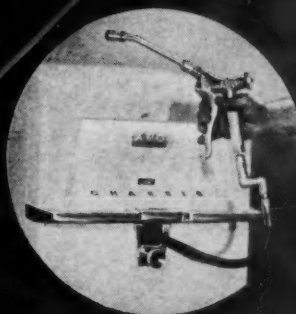
NEW ILLUMINATION! An ARO first—illumination on cabinet lubricators by indirect lighting. Spotlights your service!



NEW QUICK CHANGE OF DRUMS! Just remove the bin front, open cabinet top and raise pumping unit. Simple, fast.



NEW NEATNESS! Aro bin type cabinet permits complete concealment of hose assembly when not in use.



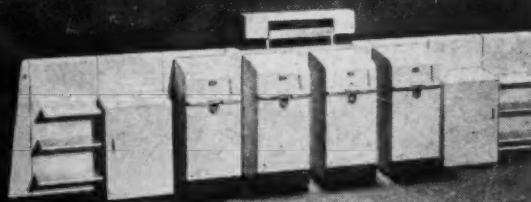
NEW CONVENIENCE! Service assembly at your fingertips. Cabinet has opening in front for hose... may be closed while operating.

Now—ARO brings you MORE to help you *profit*... with the sensational new Supreme line of Lubricators!

See how smartly they're styled—combining *new beauty* and *new illumination* to help bring in business! See the many more new Aro features that help speed up your service and save labor! See your Aro Jobber now! Write today for Supreme literature. The Aro Equipment Corporation,

Bryan, Ohio.

LUBRICATION



NEW BEAUTY! Styling by Raymond Loewy Associates... out-front in customer-attracting smartness!

ARO

LUBE EQUIPMENT AND AIR TOOLS
FOR AUTOMOTIVE SERVICE...
INDUSTRY... FARM

Engines Behind (Continued from page 90)

shifting linkage, since it must extend from the dash clear back to the tail. Just how this stands up and how frequently it requires servicing has not come to light so far. A marked freedom from engine heat and engine odors was apparent in the Tatra, although this hardly seems a valid reason for basic re-designing when insulation

has reached its present high level of development.

Safety is, of course, a major consideration and any change in design that really increases the safety factor is a desirable one. What it actually comes down to, however, is whether a front-engine or rear-engine car will best protect driver and passengers in the event of a

crash. Mostly, it seems to be a matter of choice, whether you want the engine to slide back in your lap or hurtle forward onto the back of your neck. It is significant that Tucker, in their design, have buttressed the front end heavily with rubber and steel, to make up, apparently, for the lack of a solid engine to act as a buffer up front.

All in all, then, it would appear that the mere placing of the engine in the rear of the car is not a sovereign remedy for all the shortcomings of the automobile, automotive prophets and "car-of-tomorrow" specialists notwithstanding. In fact, when all the evidence on behalf of the rear engine design is added up it becomes apparent that there is remarkably little reason for putting the engine anywhere else than where it is.

Special Driving Controls Available to Handicapped

Following the sale of special driving controls to handicapped veterans of World War II, Plymouth Division of Chrysler Corporation received so many requests from handicapped civilians for similar controls that the division has made them available to all. These controls enable the handicapped to drive a 1942 or later model Plymouth. The controls can be adapted to a wide variety of handicaps. Details were announced recently to all Plymouth dealers, and all Plymouth agencies are familiar with the installation and servicing of these controls.



"No matter what keys I punch it just spells 'nuts'."

sells on sight!

CENTRAL 360° WIRE HOSE CLAMP
MECHANICALLY PERFECT

THREE COLOR DISPLAY CARTON

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CENTRAL 360° WIRE HOSE CLAMP
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NEW - POWERFUL - LEAKPROOF
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We should like to have a FREE sample of your new, powerful, mechanically perfect hose clamp with the push plus pull action... also Bulletin No. 1274 that tells all about it.

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GENUINE STROMBERG PARTS...

MOTOR TUNE-UP DATA...

COMPLETE REPAIR INSTRUCTIONS...

PARTS LIST...

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NEW CARBURETOR PERFORMANCE
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Carburetor repair jobs go faster, are more thorough, and keep your customers happier when you use the familiar yellow box shown above. Precision-made Stromberg* parts make the job easier, and are your assurance of a finer performing carburetor. Do every Stromberg job the Stromberg way—it's easier, and more profitable. See your Bendix-Stromberg distributor or your local jobber.

*REG. U.S. PAT. OFF.

BENDIX PRODUCTS DIVISION of
SOUTH BEND 20, INDIANA



Larry's bench. "Now that that she-wolf is out of the way," he said, "how about tellin' me why you got the kid into a jam?"

"Can I help it if he starts gold-brickin'?" asked Larry.

"He wasn't loafin'. You know as well as I do you can't remove and reinstall a timin'-case cover on a Ford V-eight in no hour."

"All I know is what I read in the book."

"What book?" demanded Pop.

Larry smirked. "Oh just the Motor Age Flat Rate and Service Manual, that's all."

"I don't believe it."

"Okay," said Larry. "I'll show you."

He went to the office, took down

the current edition of the manual, and thumbed through to the right page. He speared it with a smudged forefinger. "There," he said.

Pop read the figures, then straightened up and shook his head.

"I might 'a' knowed it," he said.

"What's wrong?" asked Larry.

"You're always tellin' me I oughta look things up."

"That I have. But then I always thought you could read."

Larry started to speak, but Pop cut him short. "There ain't no book gonna do your thinkin' for you," he said. "You shoulda used your eyes. Then you'd 'a' seen that the time they give you is the factory time."

"So what? Ain't the factory supposed to know how long it takes to repair a car?"

"I guess you never bothered to read Page Eight of the Motor Age manual," said Pop.

"I didn't know I was supposed to."

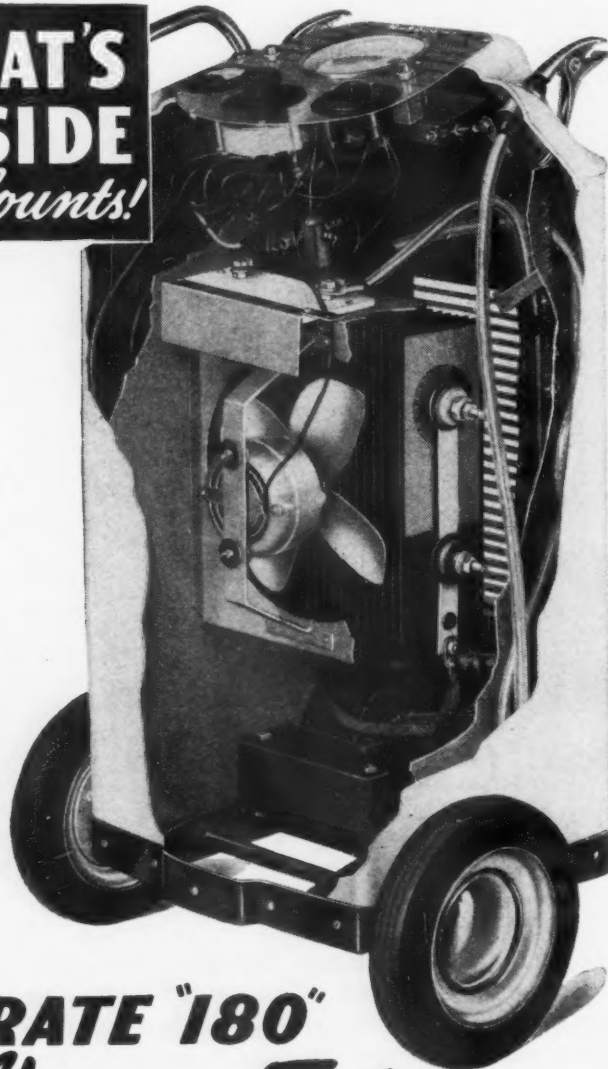
"You're like a lot of other lazy guys," said Pop. "If nobody's got a gun at your back, you don't think you've got to do nothin'." He turned to Page Eight. "Here," he went on. "Motor Age Flat Rate labor prices are based on experience and research of the Motor Age Flat Rate editorial staff and not on Factory Time."

"Smart buys, huh?" said Larry.

"No—just experienced. If they wasn't, how do you suppose they

(Continued on page 96)

**WHAT'S
INSIDE**
that Counts!



HI-RATE "180" Charger-Tester

Compare . . . Comparison Proves! Yes, it's WHAT'S INSIDE that Counts! . . . for long, dependable service. Compare Marquette's fast, accurate 30 second testing system. Compare Marquette's large, extra capacity Transformer and the oversize Copper Oxide Rectifier. The Marquette Hi-Rate has ALL of the outstanding plus features. Marquette's High Quality, extra capacity components assure you of greater accuracy and dependability.

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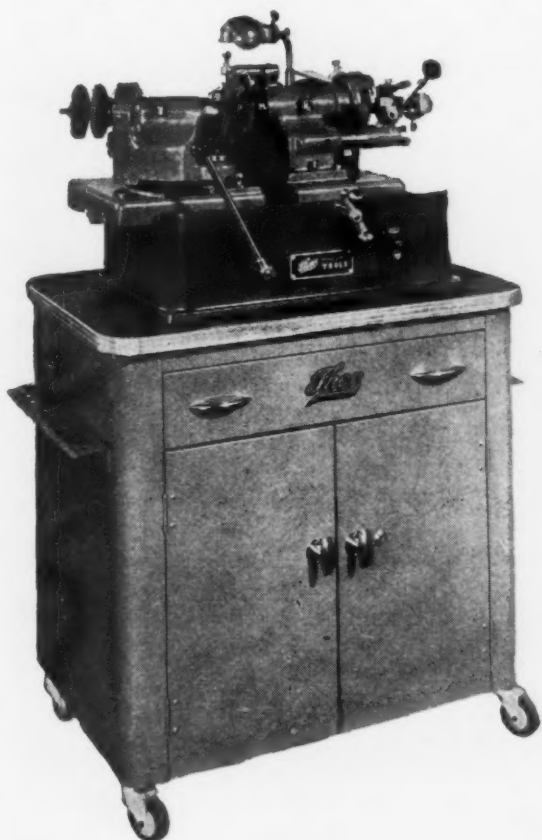
**Charging
EQUIPMENT**
HI-RATE "180" PORTO-FAST
TRICKLE-MATIC WALL CHARGERS



"Go ahead, don't be bashful. Tell him you've got to powder your nose."

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Thor VALVE REFACER *and* VALVE SEAT GRINDER



Acclaimed by automotive men across the nation, here are two NEW Thor products . . . *free of backlogs* . . . now being produced for fast delivery through leading jobbers coast to coast.

Plan your order now with your Thor jobber to assure delivery in time for winter profits or write for Catalog A-1.

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Thor

PORTABLE POWER

TOOLS

ONLY THOR JOBBERS SELL TOOLS FOR EVERY SHOP'S EVERY JOB

figured that timin'-case job we just sold was worth seven bucks and a half?"

"Where's it say that?"

"Right back here in the list of MOTOR AGE labor prices," said Pop. "And that shoulda tipped you off. If one hour was right for the time and the labor charge was seven and a half, you shoulda

knowned the MOTOR AGE gang found that the factory didn't allow enough to do the job and that it took two and a half hours or seven bucks and fifty cents."

"I'll say something was wrong," said Larry. "I guess after this I better just forget about the manual."

"You could do it easy enough.

You never had no trouble forgettin' things. But this time I wouldn't advise it."

"But if it ain't right—"

"It is right. There's only one thing you gotta keep in mind—just like it says on Page Eight. The labor is figured on the actual time. They give the factory time because that's what it says in the factory manuals. But you gotta remember that when the car factory time studies a repair job they are working on a brand new job, and the mechanics have done the job many times before, have the best equipment and know aheada time just how the job comes apart. Now outside shops like ours, we work on all makes of jobs, some of 'em have been took care of, some haven't. The mechanics is good, but they can't tell aheada time just what tools are needed. MOTOR AGE prices take that into consideration and are often higher than factory time for those reasons. Though there are some cases where MOTOR AGE says it takes less time than the factory."

Larry shrugged. "Thanks," he said. "Sometimes I don't hardly know what I'd do without you."

"And you know," grinned Pop. "I often wonder the same thing. But take a tip from me and read page 8 of the manual."



A Few Minutes' Work

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Extra Profits and New Customers




Putting on or taking off tire chains takes only a few minutes. But it's a profitable extra service your customers want and will pay for. Create good will, add new and steady customers, make extra money by offering tire chain service at a nominal charge.

Tire chains are still scarce, but repairing old sets with Pyrene* Cross Chains is easy and profitable. Order your Pyrene Chains from your jobber today.

Let your customers know you have a Tire Chain Service. We'll send you posters and window streamers to promote it free of charge. Send your request direct to us.

SAFETY SAM SAYS:
Help your customers protect their cars and trucks from fire. Sell them quick, handy, Underwriters' approved Pyrene Fire Extinguishers.

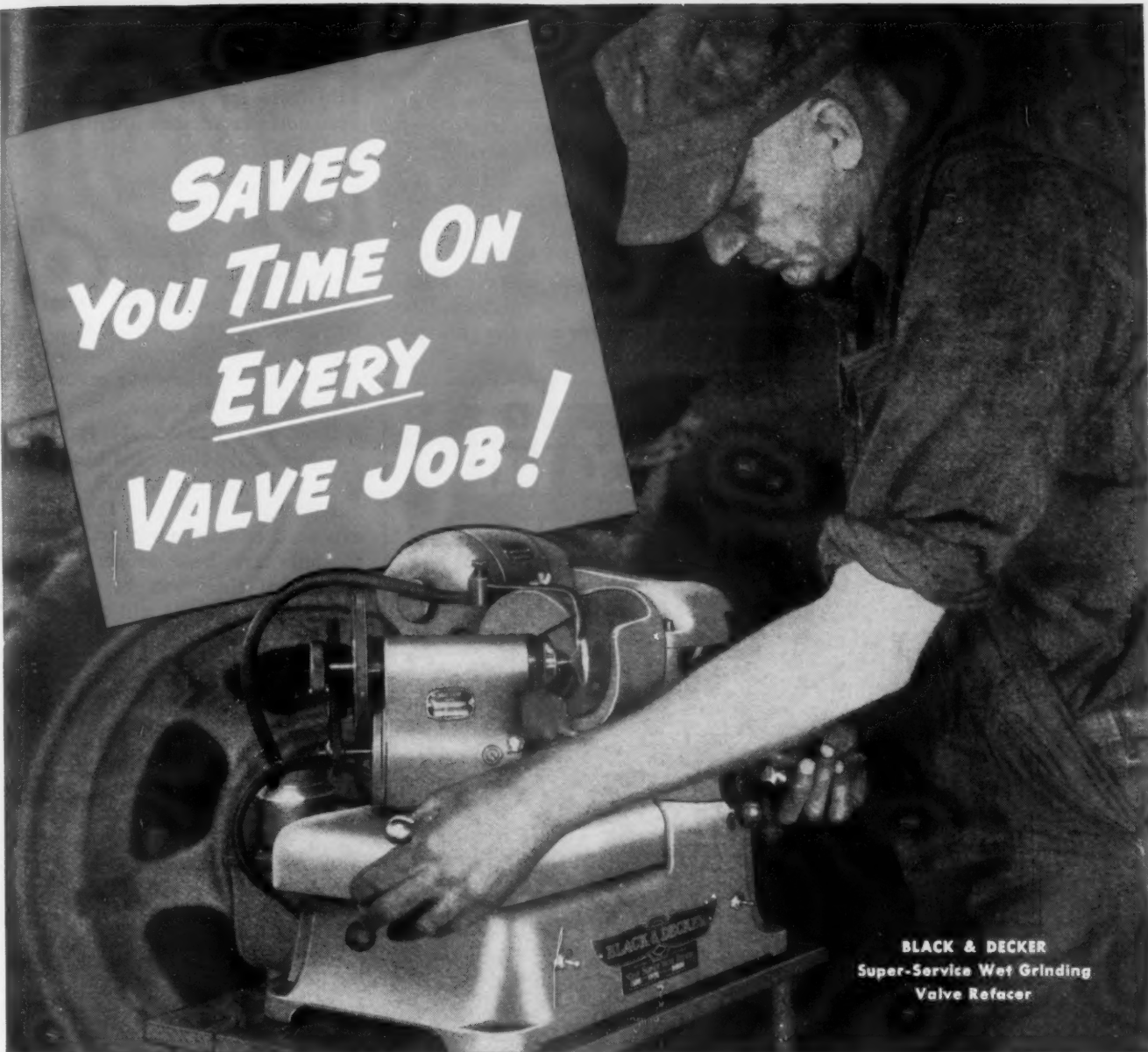
*T. M. Reg. U. S. Pat. Off.

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"Now if you'll just loosen the ropes so he can answer a few questions."

**SAVES
YOU TIME ON
EVERY
VALVE JOB!**



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Super-Service Wet Grinding
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How Are Your Tool ACCESSORIES?

"The best-equipped shops do the best work." Don't slow up your shop with worn-out accessories. Check your Vibro-Centric* pilots, stones and sleeves; Valve Refacer attachments and wheels; Hole Saws, sanding discs, wire brushes, grinding wheels, polishing bonnets. Then call your nearby B & D Distributor and order replacements. It will pay off in better, faster work!

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WITH a Black & Decker Super-Service Valve Refacer, you can quickly grind an absolutely smooth surface and factory-accurate angle on valve faces—grind valve stems and tappets for exact clearance—saving time to turn out more valve jobs every day!

Wet grinding lets you increase the speed of grinding. High-precision feed screws and slides are designed for faster operation. And this machine's foolproof accuracy gets it right the first time—so there's no work returned to tie you up. Ask your nearby Black & Decker Distributor for details. For your free copy of our catalog, write to: The Black & Decker Mfg. Co., 627 Pennsylvania Ave., Towson 4, Md.

LEADING DISTRIBUTORS



EVERYWHERE SELL

Black & Decker
PORTABLE ELECTRIC TOOLS

What Jobs Cost (Continued from page 48)

ing is overhead. It must be added to the "direct" cost, the cost of labor and materials. The "indirect" cost on a job is the overhead, and it includes all costs that are not direct costs, heat, light, insurance, depreciation, office expense, selling expense, and so forth. The reason why this overhead is so troublesome is that it cannot be charged

to a job with the mathematical accuracy possible with time and material costs. It is impossible to tell how much depreciation actually occurs on a job or how much office expense should be charged, because these expense items are not taken out of stock like materials and computed with dollars-and-cents accuracy, nor can the garage-

man charge administrative salaries or insurance at so much per hour the same as labor. Hence, a substitute formula for calculating the overhead expense chargeable to each job is needed.

Because most shops are working to capacity today, the overhead can be computed more accurately by the labor-hour method than by the percentage of cost or percentage of sales method. Moreover, labor is expensive today, and unless a close check is kept on its cost by means of the labor-hour method, a loss may occur on some jobs. When a shop isn't working to capacity, non-productive time runs high. The labor-hour calculation will not reimburse the owner for the money expended on his payroll but, if the accounts are kept properly, non-productive time will be recorded under overhead and will enter into the job costing calculation in this way and be charged proportionately to all jobs done during a given period, so that the repairman gets his payroll money back from all customers. However, if too high-non-productive time may keep the overhead ratio overly high so that business is shunted to competition because prices are too high. For this reason, the repairman should promote his business at all times to keep all his men working all the time. If he keeps his men working during all hours of operation, then the total overhead divided by the hours of operation and charged to jobs based

(Continued on page 100)

Build SAFETY into BRAKE JOBS

USE 

HYDRAULIC BRAKE PARTS




**BULK PARTS ★ WHEEL KITS
MASTER CYL. KITS ★ BRAKE HOSE
STOP LIGHT SWITCHES**

Make sure of customers' safety with these dependable, precision made brake parts!

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PREFERRED BY MASTER MECHANICS
THE WORLD OVER



"Your teacher made a mistake. Any dope knows there's no D in arithmetic."

Easy Does it *with*

U.S.

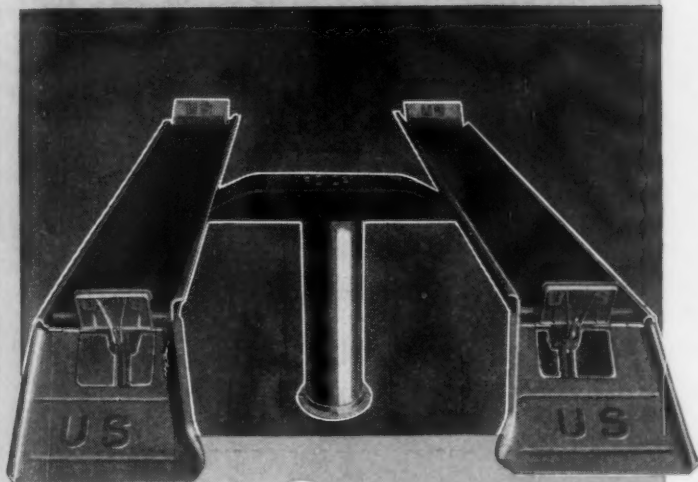
Full Hydraulic LIFTS

The car you put on a U. S. Lift goes UP with ease and comes DOWN easy. U. S. Lifts—drive-on and free-wheel—are engineered for *smooth, shock-proof, safe* operation.

Rigid, patented bearing construction eliminates impact shock on upper bearing, packing and flange bolts—eliminates danger from rocking or sway—adds years to the life of U. S. Lifts.

Easy raising and controlled descent are handled by a dual air control and oil-locked foot valve. Rigid, single-post construction makes it easy to maneuver yourself and your equipment around the car. Every part of the car is fully exposed and easy to reach. Chock blocks and stops are 100% automatic—cars can't roll off the U. S. Drive-on Lift.

There's nothing so dependable—so easy to work—so safe as a U. S. Lift. Send for the new U. S. Lift Catalog for complete details.



U. S. MODEL A-15
FULL HYDRAULIC DRIVE-ON LIFT



U. S. MODEL A-2
FULL HYDRAULIC FREE-WHEEL LIFT



THE UNITED STATES AIR COMPRESSOR COMPANY

5300 HARVARD AVENUE

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AIR COMPRESSORS • HYDRAULIC LIFTS • LUBRICATING EQUIPMENT

What Jobs Cost (Continued from page 98)

on the hours worked would return to him the sum expended for the burden and each job would bear its fair charge. A job taking 20 hours is charged twice as much burden as a job taking 10 hours. In other words, you really pay overhead expense on a time basis the same as labor, hence, the best way to charge for it is on a time basis the same as labor, allocated to each

job on the basis of the hours worked on it. The more accurately you cost your overhead on jobs, the less chance of loss there is, yet, this element is handled rather badly by many shop operators.

The loss on a job occurs between the price given the customer and the actual cost of that job. This can be determined only by keeping job costs and comparing them with

estimated costs. If a manager figures his charge on 10 hours for labor and the job takes 12 hours, he pays his mechanic for 12 hours but gets back from the customer money for only 10 hours. More than that, he loses on overhead time. He can't retrieve such losses, but he can take steps to prevent a reoccurrence if he uses his experience figures on the job costing records as guides in future operation. If he has no cost records, he has only a profit and loss statement to gage his efficiency, and even if he prepares a profit and loss statement monthly, he cannot earmark the loss or gain per job, and this is most essential to sound management.

In all merchant-craftsman businesses, much stress is placed on the importance of charging overhead properly. A great deal of wordage in print and on the rostrum at business meetings is given over to a discussion of sound practices in the handling of "burden" for the benefit of those selling labor in their transactions. This is because overhead is a big hazard in the merchant-craftsman field, plumbing, electrical contracting, flooring, roofing, and so forth, yet, many automotive repairmen depend entirely upon their financial accounts to get the lowdown on profit or loss. They use no job costing forms at all, or they record only labor and materials, using forms that are not standardized, sometimes keeping records on scraps of paper, keeping no experience figures to use as guides when pricing or costing new business.



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THE NEW *Sight Feed* ACETYLENE GENERATOR

MODEL "PS" • 14ND CARBIDE

- STEEL CONSTRUCTION
- SIGHT FEED SAFETY CHECK
- RUBBER TIRED TRUCK
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You see as you save with Sight Feed—because the carbide is always visible through the transparent Pyrex hopper. You look through the hopper—not into it! This feature is a big advantage to you because it keeps you from running out of acetylene in the middle of a weld or cut.

See the new Sight Feed at your jobbers store or write for a new catalogue No. 47PS-MA.

"Sold only through
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THE SIGHT FEED GENERATOR COMPANY

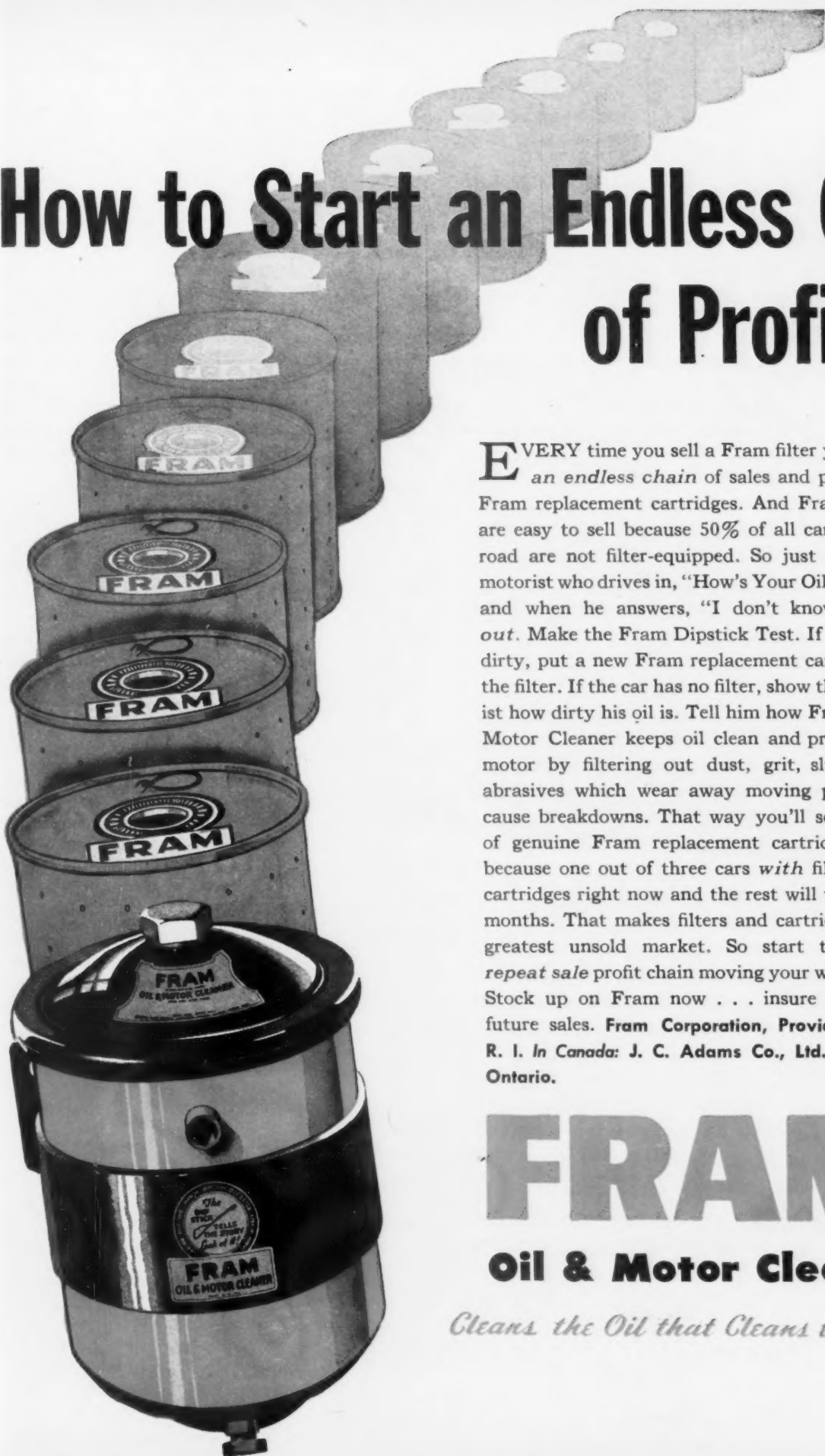
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"I've a good mind to complain about that peeping tom. He pulled the shade down."

How to Start an Endless Chain of Profits!



EVERY time you sell a Fram filter you start an *endless chain* of sales and profits on Fram replacement cartridges. And Fram filters are easy to sell because 50% of all cars on the road are not filter-equipped. So just ask each motorist who drives in, "How's Your Oil Filter?", and when he answers, "I don't know"—*find out*. Make the Fram Dipstick Test. If oil shows dirty, put a new Fram replacement cartridge in the filter. If the car has no filter, show the motorist how dirty his oil is. Tell him how Fram Oil & Motor Cleaner keeps oil clean and protects his motor by filtering out dust, grit, sludge and abrasives which wear away moving parts and cause breakdowns. That way you'll sell plenty of genuine Fram replacement cartridges, too, because one out of three cars *with* filters need cartridges right now and the rest will within six months. That makes filters and cartridges your greatest unsold market. So start the Fram *repeat sale* profit chain moving your way today. Stock up on Fram now . . . insure plenty of future sales. Fram Corporation, Providence 16, R. I. In Canada: J. C. Adams Co., Ltd., Toronto, Ontario.

FRAM

Oil & Motor Cleaner

Cleans the Oil that Cleans the Motor

Aligning Hoods (Continued from page 66)

opening is too narrow, the hood should be blocked open and the radiator upper baffle removed. The radiator grille upper moulding to fender bolts and the moulding to lower grille bolts are loosened. The upper bolt (under the fender) that holds the fender support bracket to the radiator support is removed. A jack is then placed between the

fenders directly behind the radiator grille upper mouldings and the space between the fenders increased to a minimum of 19 $\frac{3}{4}$ in. The necessary shims are then installed between the fender support bracket and the radiator support, and the bolt is installed and tightened securely. Finally, the other bolts are tightened, the radiator upper baffle

replaced, the hood lowered and the alignment checked.

If the front end of the hood does not rest squarely in the front fender opening it may be necessary to move one of the fenders either forward or to the rear to obtain accurate alignment of hood to fender. The first step in this procedure is to block the hood in its open position and loosen the four under-fender bolts that hold the fender support bracket to the radiator support. The bolt which holds the body sill panel extension to the fender is loosened, as are the hood hinge spring bracket to fender bolts and the fender tab to cowl bolt. The fender skirt to frame bolt is next loosened at the rear corner.

If the fender is to be moved forward, the jack is placed under the fender, resting, at one end, against the upper front underside of the fender and, at the other end, against the upper arm of the wheel suspension unit. If it is to be moved to the rear, the jack is reversed, resting the lower end against the suspension arm and the upper end against the upper inside of the fender.

Before pressure is applied, the hood should be lowered. Then, when the fender has been carefully pushed into position, all bolts are tightened, the jack is removed and the alignment re-checked.

When the hood-to-fender alignment has been satisfactorily adjusted, the gap between the radia-

(Continued on page 104)



**The FENDIX
"PERSONALIZED SELLING PLAN"**

**Offers Dealers Opportunity for Greater
Profits from Service Department . . .**

Write today . . . to learn how we train your personnel to be experts in applying . . . and selling.



**THE AUTOMOBILE UNDERBODY
PROTECTIVE COATING AND
NOISE DEADENER**

Write today . . . for samples of the promotion material you get . . . FREE . . . when you become a Fendix dealer.

Write today . . . to have the Davison Field Service Representative show you the successful selling plan.

THE DAVISON CHEMICAL CORPORATION
Progress through Chemistry

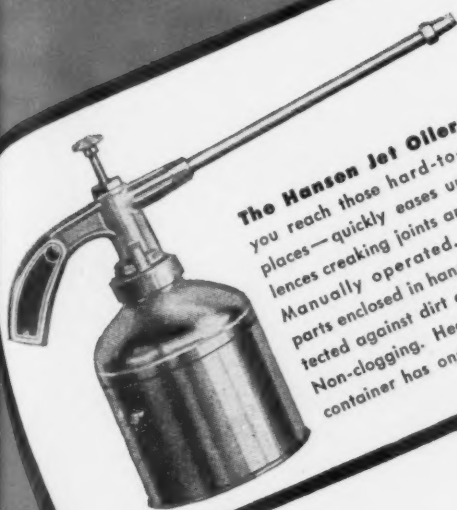
BALTIMORE-3, MD.
*REG. U. S. PAT. OFF.

SALES-SERVICE OFFICES IN PRINCIPAL CITIES

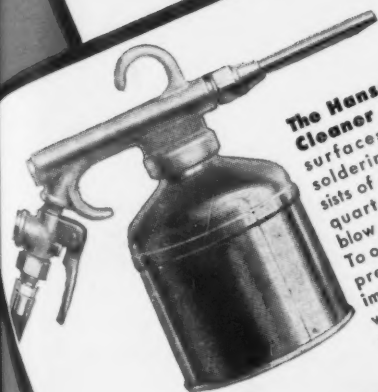


"Yep, lighter hasn't run out of fluid in seventeen years."

HOW TO BOLSTER SERVICE SATISFY CUSTOMERS INCREASE SALES



The Hansen Jet Oiler helps you reach those hard-to-get-at places—quickly eases up and silences creaking joints and springs. Manually operated. All pump parts enclosed in handle, fully protected against dirt and breakage. Non-clogging. Heavily plated oil container has one quart capacity.



The Hansen Sand Blast Cleaner thoroughly cleans surfaces before welding, soldering or painting. Consists of a sand blast gun with quart container and an air blow gun having a $\frac{1}{4}$ " stem. To operate, connect to airline, press trigger, and sand is immediately blasted against work. Blow gun can easily be disconnected for other uses.

Write for Hansen Automotive Catalog which contains full descriptions of Hansen Air Hose Couplings, Hose Stems, Sand Blast Cleaners, Jet Oilers, Engine Cleaners and other items to help you give top-notch service.

THE HANSEN MANUFACTURING CO.

931 WEST 150th STREET • CLEVELAND 11, OHIO



Hansen Automotive Couplings provide quick, easy connection of air supply to grease guns, spring sprays, car lifts, blow guns, and other air operated equipment. Slight movement of sleeve quickly connects or disconnects coupling, automatically turning air on or off. Complete swivel action prevents kinking of hose.

HANSEN AUTOMOTIVE *Air Line* EQUIPMENT

You'll always give better service, turn out more work—and turn away less—when you have exactly the right equipment to do the job thoroughly—in less time.

For over a quarter of a century, Hansen smaller automotive equipment has been carefully designed to take the kinks out of nasty, hard-to-get-at jobs. It's ruggedly constructed to take plenty of abuse—to give you years of hard every-day use. You can make your job easier—save your nerves—and make more money with Hansen automotive equipment. » » » »

REPRESENTATIVES

New England States: A. D. GEIGER, Belmont, Mass.	Indiana, Wisconsin: NEFF ENGRG. CO., Ft. Wayne, Ind.
Eastern, Southern States: B-B ENGRG. CO., Baltimore, Md.	Central Western States: JOHN HENRY FOSTER CO., St. Louis, Mo., Minneapolis, Minn.
Northern Ohio: F. & W. URSEM CO., Cleveland, O.	Western, Southwestern States: BURKLYN CO., Los Angeles, Calif.
Southern Ohio, West Va., Ky.: STEINHAGEN AIRLINE PRODUCTS, Dayton, O.	Northern Calif., Nevada: H. E. LINNEY CO., Oakland, Calif.
Northern Ill., Eastern Iowa: MORRIS ENGRG. CO., Chicago, Ill.	Michigan: WM. M. NASH CO., Detroit, Mich.

Aligning Hoods (Continued from page 102)

tor grille upper moulding and the hood should be checked. If the gap is excessive, it should be remedied as follows:

The hood is blocked open and the radiator grille upper moulding to fender bolts and the moulding to lower grille bolts are loosened. The hood lock plate to grille center support bolt is removed and the

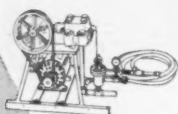
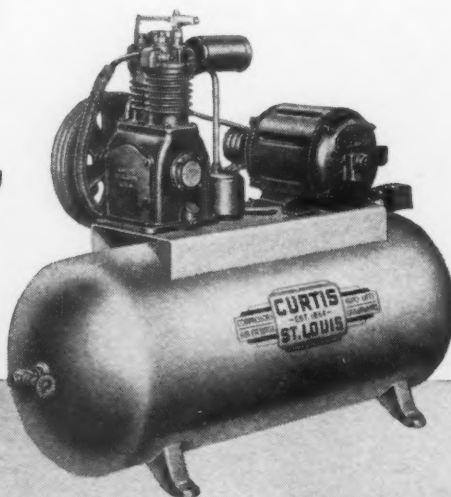
radiator upper baffle inspection cover is taken off. A spacer washer is installed between the grille center support and the hood lock plate and the bolt replaced and tightened. The radiator upper baffle inspection cover is replaced. The other bolts are then tightened and the hood lowered and checked for alignment. The hood must then be raised again

and the hood lock bolt installed, leaving the hood lock plate loose. Lowering the hood will then center the lock bolt in the lock plate. If this is not done and the screws happen to be tightened with the plate all the way forward, closing the hood will allow the lock bolt to force the latch back and catch under the plate, making it impossible to open the hood. Finally, the hood is raised again and the lock plate screws tightened and the hood lock bolt adjusted so the hood locks securely. A final overall alignment check should be made.

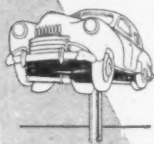
"Positive Lubrication"

*Another
Long-Life Feature
of*

CURTIS AIR COMPRESSORS



Curtis Hydraulic
Car Washers



Curtis Hydraulic
Car Lifts

The patented Centro-Ring self-oiling system with only one moving part assures proper lubrication at all times; uses less oil than ordinary splash oiling systems, contributes to the exceptionally long life of every Curtis Compressor. Other Curtis advantages include:

- Timken Bearings
- Automatic unloading starter
- Automatic welded electric tank
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- Precision construction throughout

Write for Bulletin C-6 for full information on Curtis Air Compressors, Hydraulic Car Washers and Full Hydraulic Auto Lifts.

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Company

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93 Years of Precision Manufacturing

CURTIS PNEUMATIC MACHINERY DIVISION of Curtis Manufacturing Co.
1946 Kienlen Ave., St. Louis 20, Missouri

Please send me complete
information on Curtis Air
Compressors, Auto Lifts,
and Car Washers.

Name.....
Firm.....
Address.....
City..... Zone..... State.....


Perfect Circle Names Prosser General Manager

Ralph Teetor, President of Perfect Circle Corporation, has announced the appointment of Wil-



liam B. Prosser as General Manager of the Corporation.

Mr. Prosser became Sales Manager of Replacement Sales for the General Piston Ring Company in 1925. When this company was absorbed by Perfect Circle in 1928, he was made manager of the Perfect Circle Tipton Plant. Returning to the selling phase of the business, he later became Sales Manager of the Manufacturers Sales Division. During World War II, he organized and was Plant Manager of the Perfect Circle aircraft ring plant at Richmond, Indiana. Since October, 1943, Mr. Prosser has been General Factory Manager for all Perfect Circle plants.



there's an easier way
to eliminate headaches
from exhaust gases

simply install AIR CLEAR . . .

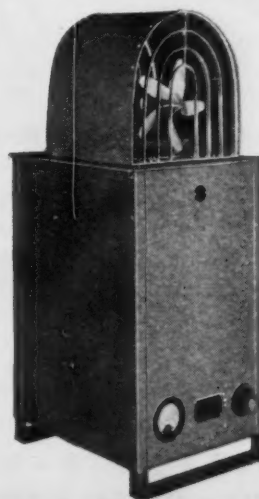
With **AIR CLEAR** on the job, exhaust gases are destroyed electrically — headaches, drowsiness, nausea are eliminated. Hundreds of progressive garages and service shops throughout the country have installed these units and successfully overcome their exhaust gas problems.

AIR CLEAR destroys exhaust gases almost as soon as they are formed . . . increases efficiency . . . improves employee relations . . . steps up profits. It's the *new* way, the *modern* way to make your shop a better and more profitable shop to work in. Write for complete details.

GENERAL OZONE CORPORATION

17 West Sixtieth Street, New York 22, N. Y.
New York • Chicago • Denver

Manufacturers of ozone generating equipment for garages . . . cold-storage warehouses . . . refrigerated cars . . . walk-in coolers . . . air recirculating systems . . . homes . . . hospitals.



GARAGE *Air Clear*

DESTROYS EXHAUST
GASES ELECTRICALLY

Clearing House . . . (Continued from page 55)

the same time a compression test was made. According to the mechanic it should be 120 lb., it checked anywhere from 100 to 115. He claimed my trouble is valves or valve guides. Although this may be the case, I hope that there may be some other solution without going to the bother and expense of an overhaul.

IN reference to the trouble you are experiencing with a Ford rebuilt engine, if this engine was rebuilt by a reputable company it should have new valves and valve guides, which would eliminate that as a possible source of your trouble. Certainly valve or valve guide trouble would affect your compression, but compression of

100-115 lb. would not give you the very poor performance you mention. It is not impossible that the valves are incorrectly timed, and I would suggest that you have this carefully checked.

However, I am inclined to believe your trouble will be found in the distributor. I realize that you have had the distributor rechecked, but I have known of many cases where the work was not actually done.

For instance, I just obtained a rebuilt Ford distributor from a reputable house and before installing it I asked them to synchronize the points. I took this distributor and checked it personally to find that the synchronization was off, and in addition, the centrifugal advance was not working at all. Many other mechanics have experienced the same thing, and it is extremely difficult to obtain satisfactorily rebuilt distributors.

I would strongly recommend that you have the distributor rechecked, both for synchronization and advance. It might also pay to make sure that your intake valve manifold is pulled down evenly so that there is no chance for any leaks.

To me, your trouble sounds like mostly distributor, and if your compression is all right you should not have much difficulty making checks to be sure the carburetor and valve timing are correct.

This Plymouth Needs Piston Expanders

One of my customers has a 1946 Plymouth P-15. It has 16,000 miles
(Continued on page 108)



"Father, there's a wolf in your flock."



STOPS
SQUEAKS & SQUEALS
IN WATER PUMPS

PREVENTS
FORMATION OF
RUST IN COOLING
SYSTEMS



One pint of Lubro poured into the cooling system gives pump seals and bearings a protective oil coating which stops all squeaking and insures longer pump life.

Too, Lubro is an effective rust preventive for use with water, alcohol, or any standard anti-freeze. It is harmless to hose connections and metal.

Other famous Serco Products:
NOXO • SERCO • KI-MO • RUSGO
SOLVO • REESO • SHAMO • D-GRESO

Service Supply Co.
 1115 SEVENTH ST. • DENVER 4, COLO.

Top ring groove wear licked at last, dependably, economically, with the

SEALED POWER GI-60

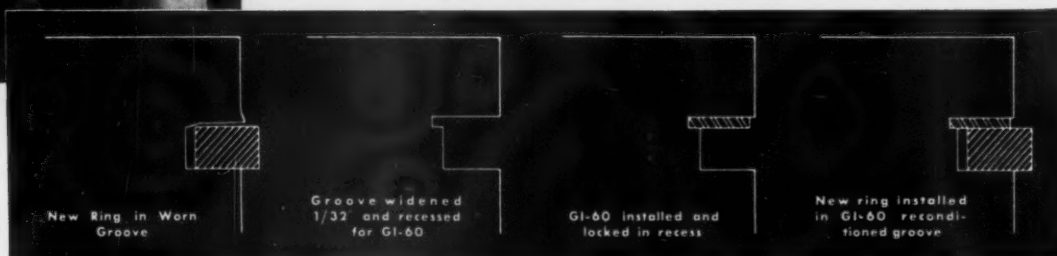
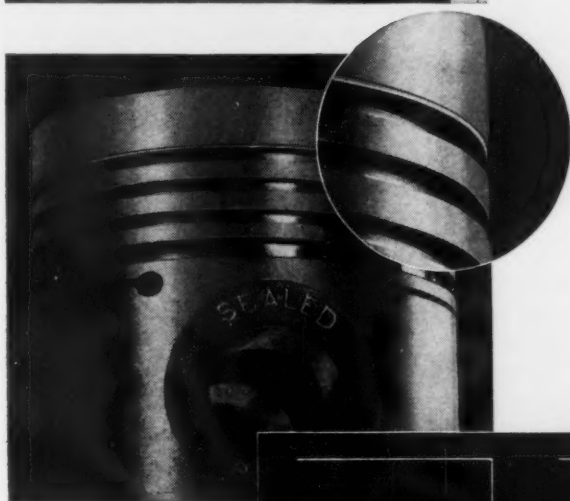


EVEN an apprentice mechanic knows that when you put good piston rings into worn top ring grooves, those rings are down for a nine count before they start working. Worn grooves let gas blow by, cause ring damage, cylinder wear, and excessive waste of fuel. If you widen the groove and install a wider ring, you are asking for trouble—because you have changed the original specification of the engine manufacturer. An ordinary spacer means that you have merely put in a wider ring in two sections.

The new Sealed Power GI-60 Contracting Groove Insert is not a "spacer." It does not float. It is anchored securely at the top of the ring groove, which has been re-grooved to an absolutely true surface $1/32$ " wider than before, with a $1/32$ " recess at the top. GI-60 fits into this recess, locking itself permanently in place. It forms a heat-treated spring-steel shield that resists wear and pounding of the top land better than either aluminum or cast iron can resist it.

Your Sealed Power distributor is now equipped to furnish this service for you. It is the only dependable, economical answer to top ring groove wear. It is equally effective in worn or new replacement pistons. Cost is low. Benefits are great. GI-60 has been thoroughly field-tested and proved by large commercial fleets. Ask your Sealed Power distributor now for this new Sealed Power service.

Makes Old Pistons New—Keeps New Pistons Young



SEALED POWER CORPORATION

MUSKEGON, MICHIGAN • STRATFORD, ONTARIO



Clearing House . . . (Continued from page 106)

on it. He brought the car to me and told me to take the knock out of it as it clattered quite loud when cold but run quiet enough when warm. I diagnosed it as piston slap, thinking that perhaps one piston had collapsed. After knocking the engine down I found all the pistons to be in good shape, having the proper clearance as per

specifications. The pins were also O.K. I checked the rods for alignment, they were fine, crankshaft end play—main bearings and con rods were also checked and O.K.

After I broke the glaze and installed a new set of rings, I re-assembled the motor and tried it. It was just the same.

The noise when the motor is cold

sounds like a bunch of loose valves rattling and as the motor warms up the noise gradually disappears. My customer tells me this car has been in that condition since he purchased it new. He reported it to the service department where it was purchased but was told all Plymouths sounded like that and the knock would disappear. Will you kindly give me a lead on the trouble?—John B. Peterson, 55 Cagneau Avenue, Sausalito, Cal.



CUT JOB COSTS

PROMPT DELIVERY

Quick delivery from distributors' stocks or from factory.

PRICES

Start at \$145.00, f.o.b. factory. Average price increase over prewar level less than 15%.

TIME PAYMENTS

Factory Time Payment Plan 25% down—twelve months to pay—moderate finance charge.

South Bend Lathes turn out more and better service work in less time and at lower cost. They are indispensable for reconditioning operations on pistons, valves, shafts, king pins, axles, brake drums, commutators; making bushings and many other parts. You keep the work in your own shop—save machining charges—and speed-up your service.

South Bend Lathes are fast, easy to operate and exceedingly accurate. Their versatility permits efficient performance over the entire range of automotive service operations. If you are interested in cutting job costs and doing better service work, get complete information on South Bend Lathes. Write for Catalog 100-F, it describes South Bend Lathes with 9", 10", 13", 14½", and 16" swings.

BUILDING BETTER LATHES SINCE 1906



SOUTH BEND LATHE WORKS

450 EAST MADISON STREET • SOUTH BEND 22, INDIANA

NOTE that you installed new rings but no mention is made of having installed piston expanders. I would suggest that you install some piston expanders and while I do not think it will make much difference what type you install, some of the men I talked to said they had somewhat better results with Thexton expanders for this particular condition.

From what I have been able to learn this will take care of the trouble in most cases but as you, yourself, have experienced, it is rather difficult to make a positive cure.

Increasing Horsepower And Speed of Buick

I am interested in getting information as to how I can increase the speed and horsepower of a 1936 Buick. Can you give me any information on this or tell me where to write to get the information?—A. MacDonald, 261 Richard Street, Rochester 7, N. Y.

(Continued on page 110)



"And all the time I thought it was spelled like it was pronounced."

AUTHORIZED FACTORY

REBUILT AC FUEL PUMPS

ARE REALLY REBUILT - NOT MERELY REPAIRED!



Authorized factory rebuilt AC fuel pumps are sold in all trading areas on an exchange basis by United Motors Service distributors.

**They give you one of the
greatest values on the market today**

Authorized factory rebuilt AC fuel pumps, made available to you through United Motors, are rebuilt to higher standards than ever before.

Each part in the pump, and the complete assembly, must "live up" to factory specifications.

Each part must undergo the same rigid inspections, performed on the most modern testing devices.

Each rebuilt AC fuel pump must meet factory standards for tolerances, vacuum and pressure.

To give you this exceptional value, all worn parts are discarded and replaced with new parts. And in the case of such vital parts as the diaphragm—the heart of the pump—replacement is made with new, original-equipment parts, *regardless of the condition of the old parts.*

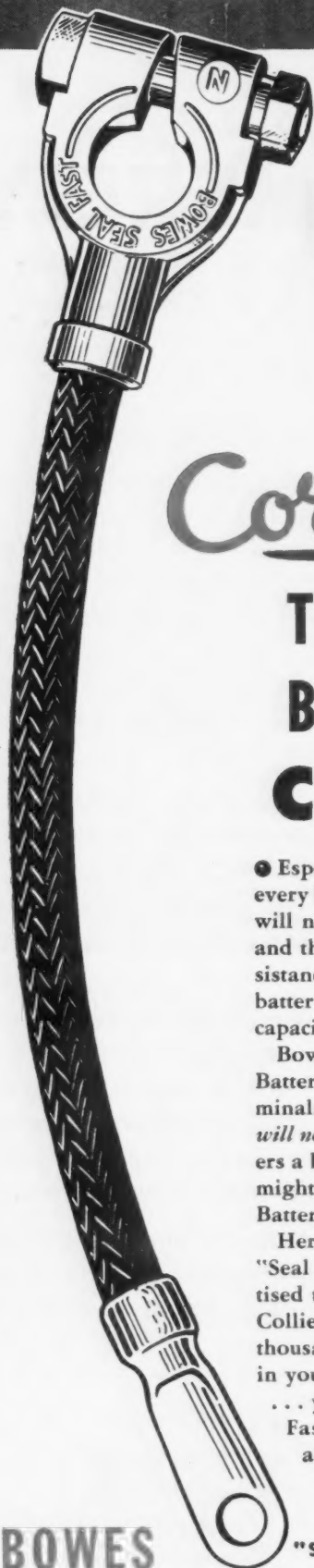
That's why United Motors is able to back every rebuilt AC fuel pump with the *standard warranty policy*. You just can't go wrong on this great replacement value.

UNITED MOTORS SERVICE

**DIVISION OF GENERAL MOTORS CORPORATION
GENERAL MOTORS BUILDING • DETROIT 2, MICHIGAN**



Now's The Time



to Sell
BOWES



Corrodeless

TERMINAL BATTERY CABLES

● Especially in cold weather, a motorist needs every bit of power from his battery. Corrosion will not only ruin the battery cable terminal and the cable itself, but will also set up a resistance which will lower the power of the battery and sap its life because the carrying capacity of the cable wire is greatly lowered.

Bowes "Seal Fast" Corrodeless Terminal Battery Cables cure that right now! These terminals fit snugly, won't stretch, and *positively will not corrode*. You'll be doing your customers a big favor . . . and making yourself some mighty nice profits . . . by installing Bowes Battery Cables on their cars.

Here's why we talk about profits. Bowes "Seal Fast" Battery Cables are being advertised this fall in *The Saturday Evening Post*, *Collier's* and *The Farm Journal*. You have thousands of readers of those magazines right in your territory. We're creating the demand . . . you get the gravy. Have Bowes "Seal Fast" Battery Cables on hand and take advantage of this advertising!

BOWES

"SEAL FAST" CORP., INDIANAPOLIS 7,

Readers Clearing House

(Continued from page 108)

THERE are several things you can do in order to increase the speed of your 1936 Buick. First of all, you can increase the compression by planing approximately .060 in. from the cylinder head. I do not think it would be practical to remove more than this because of the possibility of weakening the wall of the water jacket and also the possibility of getting excessive detonation unless special fuels are used. It will also be necessary to use a cooler running spark plug as a result of the higher compression and also the spark will have to be retimed. If you wish to go to the expense, you can have special manifolds built so as to install two or four carburetors which would also aid materially in increasing speed.

Piston and bearing clearances should also be increased so as to reduce internal friction. In this connection I would suggest that the piston clearance be increased by approximately .002 in. and rod and main bearing clearances by approximately .001 in. In order to reduce any tendency for valve flutter, valve spring tension should be increased and, of course, you want to be absolutely sure that the valves are ground in.

Normal breaker arm spring tension is approximately 18 ounces—improved operation at high speeds will be obtained if this is increased to 25 ounces.

Of course, one of the major factors in increasing speed of any vehicle is the wind resistance. However, if you are retaining the passenger car body, there is not much you can do about that. I would strongly advise paying particular attention to shock absorbers to make sure they keep wheel spin at a minimum.

If you do not object to an engine that has a rough idle, and poor slow speed performance, you can reduce the weight of the flywheel by reducing its thickness.

To return to the engine—if you can obtain lighter pistons these should be installed and I want to emphasize the necessity of carefully balancing the pistons and rod assembly so that they are all alike within one-half ounce.

ACME for *BLACK BEAUTY*

EACH of these favorite BLACKS has its purpose: The right black for the job. KEEP ALL THREE ON HAND, and be ready to do any black job quickly—and beautifully!

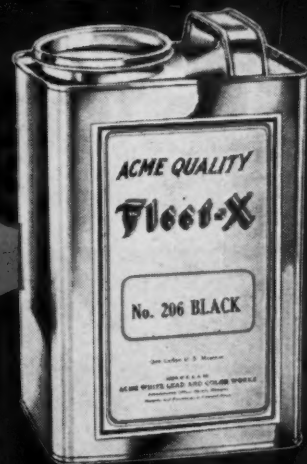


A fast-drying black with a natural high lustre. Easily rubbed and polished; Acme 509 cleans up with ease. Its high solid content brings down your cost per job.

509
LACQUER

206
SYNTHETIC
ENAMEL

Gives you a dust-free set-up in 7 to 10 minutes, with no orange peel. Dries with that enamel high gloss. Sparkles with black beauty.



Made for spotting jobs originally finished with synthetic enamel. Seldom needs compounding. Combines the fast drying of lacquer with exceptional weather-resisting qualities. Dries with high natural lustre.

1724
SPOTTING
SYNTHETIC
BLACK

The
ACME WAY
Makes
PAINTING PAY

ACME

AUTOMOTIVE PAINT PRODUCTS

ACME WHITE LEAD AND COLOR WORKS • DETROIT 11

Legally Speaking

A lawyer's interpretation of federal and local court decisions of interest to repairmen and car dealers

Safeguards for Employers

That an employer cannot be held responsible under all circumstances for an injury or occupational disease incurred by an employee in the course of his employment, is apparent from the opinion of the

Federal court in a recent case.

There, an employee sued his employer, a manufacturing corporation, for damages resulting from "silicosis" allegedly contracted as a result of his employment. One of the contentions by the employee

was that his employer had failed to furnish the safeguards required by the statutes of the state in which the plant was located. These requirements had to do with ventilation, heating and humidity of factories and work rooms.

One of the defenses made by the employer was that the employee's own negligence had contributed to his condition. It was urged by the employee that where the employer has failed to furnish the safeguards required by statute the defense of the contributory negligence of the employee cannot be set up.

"Violation of a statute imposing a duty to furnish safeguards for the benefit of employees," the Federal Court ruled, "is conclusive as to the negligence of the employer charged with the violation. It does not follow, however, that the defense of contributory negligence is not available."

Citing an earlier case where an employer had failed to provide fire escapes as required by law, the court said:

"The employer's negligence was established as a matter of law by his failure to provide a fire escape, and the jury was instructed that it should find a verdict for the employee unless it found that the employee had been negligent and that his negligence had contributed to the accident."

The legal and practical meaning of this decision is that even though an employer may have been negligent in failing to provide safeguards for the protection of the

(Continued on page 115)

KEEP THE BUSINESS CLEAN

with



CAR WASH

No automobile can be properly cleaned without the use of a water softener. Without a water softener you simply smear the grease and dirt around, but do not get the automobile clean.

HARCO CAR WASH is a safe and economical water softener. It will quickly emulsify all dirt and grease and will then rinse off a car thoroughly, leaving a perfectly clean surface. Also, it eliminates the hard work in connection with the use of abrasive cleaners often used with waxes and polishes.

Instead of taking the paint off your customer's car, be safe—use **HARCO CAR WASH**—the perfect cleaner.

Contact your supplier, or write us for further details of the complete **HARCO** line.



Also makers of **HARCO**

**CARBO SOLVE • DRIVEWAY CLEANER • GREAS-OFF
GREEN BAR SOAP**

HARLEY SOAP COMPANY

Philadelphia 37, Pa.

KEEP THE BUSINESS CLEAN

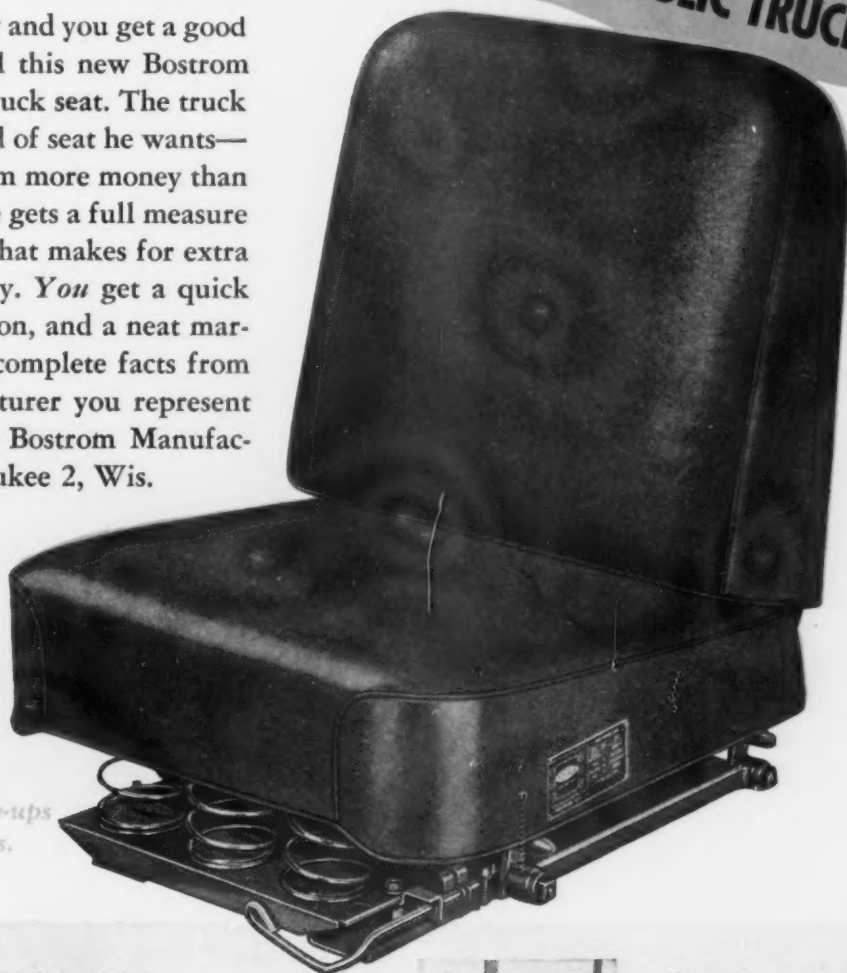


"See the perfectly good barrel I won, dear?"

Here's the Seat Truck Owners Are Asking About

- **ELIMINATES SEAT REPAIR BILLS**
- **PROVIDES SAFETY AND COMFORT**
- **FITS RIGHT OVER THE GAS TANK**

Both your customer and you get a good deal when you sell this new Bostrom No. 47 hydraulic truck seat. The truck owner gets the kind of seat he wants—a seat that saves him more money than it costs. Besides, he gets a full measure of driver comfort that makes for extra safety and efficiency. *You* get a quick sale, easy installation, and a neat margin of profit. Get complete facts from the truck manufacturer you represent or write direct to Bostrom Manufacturing Co., Milwaukee 2, Wis.



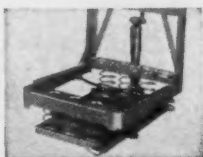
No more truck lay-ups
for seat repairs.

No more
costly
upholstery
jobs.

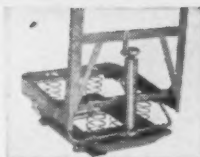


NOTE THE EXCLUSIVE FEATURES OF THE BOSTROM NO. 47

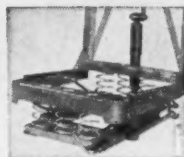
Durable frame
for heavy duty
use fits right
over the gas
tank. Has fore
and aft adjuster.



Hydraulic shock
absorber takes
the jolts instead
of the driver.
Prevents fabric
wear.



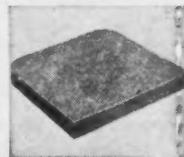
All moving parts
of suspension
mechanism move
in rubber. Nothing
to wear out.
No oiling.



Original seat
coverings outlast
ordinary cushions
6 to 1. Can be
replaced at low
cost in 10 minutes.



No coil springs to
damage fabrics.
Three inch bonded
rubber pad
lasts a lifetime.



Pioneered by Alcoa

T-SLOT

CAM GRINDING

Permitting Closer Fitting of Piston and Close Conformity of Piston and Barrel when Hot



ALUMINUM COMPANY OF AMERICA
Makers of Lo-Ex Piston Castings of Alcoa Aluminum
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LO-EX *Pistons* of Alcoa Aluminum

REGISTERED TRADEMARK



Legally Speaking . . . (Continued from page 112)

employee, the employee will not be permitted to collect damages for his injuries or occupational disease if it appears that the employee's own negligence contributed to the accident or the disease. Thus, even though a factory building may not have all the fire escapes strictly required by law, nevertheless, an employee who has a safe exit from the burning building and fails to use it, cannot claim that the employer is responsible for the employee's resulting injuries because of the absence of fire escapes.

Such suits against employers are brought where the workmen's compensation act of the particular state does not cover the particular injury or occupational disease incurred by the employee. Also, in some states an injured employee has a choice between accepting the benefits of the workmen's compensation act or bringing a damage suit against the employer. (*Kolenko vs. Certain-Teed Products Corporation*, 20 Federal Supplement, 920.)

Use of Trade Name

A repairman who wants to use a trade name of his own for an item he is selling or a part he is using may find himself in trouble unless he chooses the trade name with the utmost care. Of course, he would not use a trade name already being used for the same kind of item, but he is not safe in adopting for his item a trade name

known and used in connection with some entirely different kind of product, according to a New York court decision.

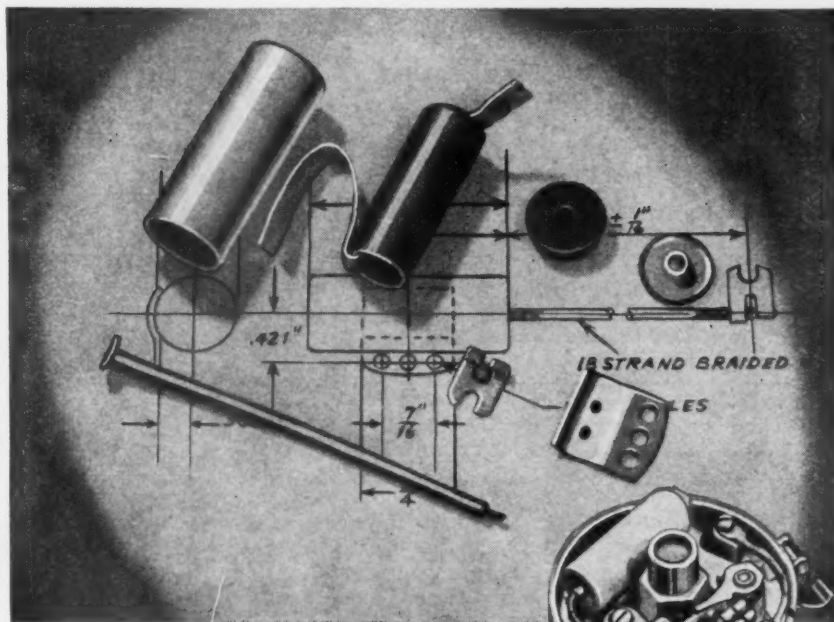
In that case a distributor of razor blades decided to adopt a brand name of his own for his blades and selected a name used by a manufacturer of a wholly different line of products who had never made razor

blades and had no intention of doing so. Nevertheless the manufacturer brought legal action to prevent the use of his brand name in connection with razor blades.

The New York Court granted him an injunction prohibiting the use of his brand name on razor blades.

"Where confusion of source is probable," the court said, "an injunction should be granted, whether

(Continued on page 116)



Quality

ALL THE WAY...



In the selection of raw materials, in design, in engineering, in workmanship, in packaging and performance **QUALITY** is the keynote at Niehoff.

Niehoff Quality Ignition Parts make for quality service that attracts and holds quality customers. That is why thousands of Automotive Service Shops prefer and recommend Niehoff Approved Quality Products.

A national network of Niehoff Jobbers makes these quality products available to you.

C. E. NIEHOFF & CO.

4925 Lawrence Avenue • Chicago 30, Illinois

NIEHOFF

Automotive Products

Branches: 1342 S. Flower St., Los Angeles 15, Calif., 250 W. 54th St., New York 19, N. Y.



"You mean you walked all the way home? . . . And you wearing my nylons!"

Legally Speaking . . . (Continued from page 115)

the infringing use is upon a competing or non-competing product. A trade mark or name is more than a symbol of existing good will or a mere commercial signature; it has a creative function; it serves as a silent salesman to attract custom; the dilution of its selling powers by use on non-competing products constitutes a real injury.

"In the present case the trade name has been widely advertised and is well known as a brand for radio sets and accessories. The defendant's adoption of the mark cannot be charged to coincidence. It is obvious that he is seeking to trade upon the reputation of the name. It is immaterial that there has been no direct representation

of trade connection with the original manufacturer. The very use of the brand is sufficient to induce a mistake of identities and therefore an injunction should be granted."

This decision follows the modern legal principle that the owner of a trade name or trade-mark should be protected in its use even against non-competing products. The New York court pointed out that its decision in this case is in harmony with the rulings of the Federal courts on this point. (*Philadelphia vs. Mindlin*, 296 New York Supplement 176.)

Frye Appointed Chief Engineer of Griffin Co.

Harold F. Griffin, president of The Griffin Lamp Company, Hamilton, Ohio, has announced the appointment of Harold B. Frye as head of the Engineering Department.

The newly-appointed department head was formerly chief engineer of the K-D Lamp Division of Noma Electric Corporation, Cincinnati, Ohio, and chief electrical installation engineer for Superior Body Company, Lima, Ohio.

He brings many years of practical experience in the design, development and manufacture of electrical lighting equipment to the recently-formed Griffin organization. In addition to the above listed positions he served on the SAE Section Executive Committee and as an Associate of the American Institute of Electrical Engineers. During the war, he was connected with the Electrical Design Section of the Corps of Engineers at Wright Field.

Frye's responsibilities, as announced by Mr. Griffin, will include supervision of all product design and production engineering required in the manufacture of automotive safety lighting equipment for fleet operation.

Campbell Co. Appoints Miller as Vice-President

Campbell Filter and Manufacturing Co. has announced the appointment of Bruce C. Miller as vice-president and general manager of the company.

Wayne Features

FOR HIGHER EFFICIENCY

Greater

ACCESSIBILITY

WAYNE Air Compressors provide more air at the right pressure, at lower cost. They're backed by a Nation-wide Service Organization. Write for catalog.

THE WAYNE PUMP CO.
FORT WAYNE, INDIANA

AIR COMPRESSORS

GASOLINE PUMPS - CAR WASHERS - AIR SCALES - HOSE REELS - AUTO LIFTS

It's new!



A hose and fitting selector to help your jobber serve you better



New Weatherhead Unit makes it handy and quick to select the right gas, oil or vacuum fuel line or re-usable hose fittings and hose for practically every make of car, truck or bus.

This new Weatherhead Display Unit will soon be seen in your favorite jobber's store. These units speed up service to you on your fittings and hose line requirements.

Handy "How to Make Up" charts in the new Weatherhead catalog simplifies your selection of the correct gas, oil or vacuum line you will need.

All of these re-usable hose fittings are designed to be used with over 90% of your replacement parts requirements.

This self-service, time-saving unit will help your jobber improve his service to you as well as furnishing you in one unit a comprehensive selection to fit every requirement.

So, when you see this new Weatherhead unit on your jobber's floor, you can be sure he's progressive . . . that he's utilizing the newest methods to improve his service to you, as well as supplying you with the best replacement parts obtainable.

Weatherhead Automotive Products include: Drain Cocks, Dash Controls, Fittings, Hose and Fuel Line Assemblies.



Look Ahead with

Weatherhead

THE WEATHERHEAD COMPANY - CLEVELAND 8, OHIO

CLEVELAND • NEW YORK • DETROIT • CHICAGO • LOS ANGELES • HOUMA, LA.

Chevrolet Plan (Continued from page 64)

taled. After the market value of the car is subtracted, the overallowance is listed as the difference. Variable expense is then added to the overallowance and this sum subtracted from the total new car gross to show the amount of variable net profit on the deal. If the deal is turned down early in the month, but is not too "long,"

the dealer may then approach the prospect late in the month if his overallowance budget will permit, and attempt to reach a bargain.

The used car manager's control form is divided into inventory, month-to-date sales, and turnover based on net dollar reduction. His objectives are based on the number, age and condition of cars in

inventory, the volume of tradeins expected on new car sales, and the dealer's aim to reduce or increase his dollar inventory of used cars, which varies with the season. Under the heading of inventory are listed daily tradeins, reposessions, purchases, and reconditioned jobs; dollar inventory, passenger and commercial units showing total, days' supply, the number held over 30 days, and those not ready. The month-to-date sales section lists retail and wholesale sales of cars and trucks separately and in total; total dollar sales; gross profit exclusive of overallowances; inventory value of sales, and tradeins on used cars both in units and in dollars. The turnover section of the report shows actual figures for the month, the daily and monthly objective, and the month's clearance. A supplementary form shows the unit inventory stock balance control. Thus the used car manager can tell what he has in stock at all times—Chevrolet and other makes, two-doors, four-doors, trucks, his inventory in dollars, units and models, how long each has been held and his daily trading profit or loss.

The parts manager's control record is divided into three categories, parts sales, accessories sales and supplementary. As in the other types, monthly and daily objectives are entered after they are determined on the basis of previous month's record, and other factors, such as seasonal demand. Parts sales with repair orders are

(Continued on page 120)

Another Leader

by

National

GARAGE TOOLS

A NEW IMPROVED
SPRING SPREADER FOR
FORD, MERCURY AND
LINCOLN SPRINGS





CLUTCH ALIGNING TOOL

AXLE RETHREADER

DOUBLE-FACED HAMMER

PITMAN ARM PULLER

PITMAN ARM WEDGE

OIL PAN WRENCH

BATTERY PLIER

A NEW item in the National line is this improved Spring Spreader designed to give the mechanic a complete, safe and efficient unit for spreading both front and rear springs on Ford, Mercury, and Lincoln automobiles. This spreader is the product of over 15 years experience in the manufacture of Ford Spring Spreaders. It incorporates all of the features required for safe efficient operation, yet is priced far below the range ordinarily charged for this type of equipment.

The recessed ends of this tool allow the pressure to be directed in a straight line to the point of least resistance; eliminate twisting and distortion in operation; and prevent damage to the shackle eye. The interchangeable tips on the one end quickly adapt this tool for use on either front or rear springs, permitting a range from 30" to 52".

The set is furnished complete in a corrugated shipping container. Shipping weight, 15 lbs. No. 493 . . . Complete with Wrench, Price . . . \$8.50 Dealer's Net.

National Machine & Tool Co. Inc.
JACKSON, MICHIGAN, U. S. A.



"I washed it last night and I can't do a thing with it."

AND NOW CRESCENT-WIRY JOE BRINGS YOU BATTERY CABLES in *DISTINCTIVE MAROON!*

AGAIN CRESCENT-WIRY JOE LEADS IN MODERN MERCHANDISING by offering you this famous battery cable in the distinctive Crescent-Wiry Joe maroon! Now it's even easier than ever before to build volume and profit by selling this famous battery cable.

CRESCENT-WIRY JOE MAROON CABLES INCORPORATE ALL THESE FEATURES

- 1 Distinctive maroon finish—modern from lug to terminal.
- 2 Extremely heavy brass terminal, lead coated.
- 3 Electronically soldered connection, using the most modern equipment in which 400,000 cycles per second of high frequency current is employed, making the perfect connection, eliminating burned insulation, leaving a perfect maroon finish.
- 4 Pressure-welded copper lug.
- 5 High gloss lacquer finish, proof against oil, grease, heat, abrasion.
- 6 Full No. 1 gauge copper conductors.
- 7 Attractive sturdy packages of modern design increase shelf value; protect battery cable up to installation.



✓ Check
the wire
on every
job!

WHEN NEXT IN OUR NEIGHBORHOOD, DROP IN . . . SEE HOW CRESCENT-WIRY JOE AUTOMOTIVE CABLE IS MADE FROM COPPER TO FINISHED PRODUCT IN ONE PLANT UNDER ONE ROOF

Chevrolet Plan (Continued from page 118)

listed separately for cars and trucks and lumped into a total in a third column. Other columns list counter and wholesale sales and total parts sales exclusive of internal. Accessories sales are listed under counter, internal, with new cars, and total. Analysis of this record during the month serves to show soft spots which

should be doing better, such as any slump in heater sales during a cold spell.

The service manager's control record is a very important segment of the control plan. It is here that the dealer makes his contact with old customers and future new car prospects and in addition to enabling him to keep an accurate

check on the operating profits, it also helps him to ferret out practices which may be driving customers away from his place of business. With reasonable objectives set, a sharp deviation upward in the number, dollar sales, or average size of the customer labor orders may indicate that the customer is being oversold and thus antagonized. A marked dip, on the other hand, may be the result of indifferent service, with equally bad results. The record shows under the heading of customer labor sales the number of repair orders, the total dollar sales, and the average order for cars and trucks, separately and in total. Parts sales with repair orders are recorded for cars and for trucks, and in total, under dollar sales and per order. Here again, a close daily check is possible to discover any overselling or inadequate service to the customer.

Transfer of data from the daily record sheets to the dealer's master control record is simply a matter of bookkeeping. This master control also has headings for other items of the business such as variable and fixed items of expense which are entered daily, enabling the dealers to tell each day of the month where he stands on operating profits for the period.

While the plan may sound complicated to the small dealer who may not have the same conditions of operation as the large retail outlet, it is flexible to the point where any size dealership can use it, according to Chevrolet.

St. Louis Parts Assoc. Holds Annual Elections

Greater St. Louis Automotive Parts and Equipment Association elected the following officers to serve for the coming year: Dan F. Hyland, Alemite-Stewart Warner distributor for the district, president; William Hudgins of Koochook Co., Inc., vice-president; Gordon R. Porter of Universal Parts and Service, Inc., secretary and treasurer, and John D'Agustino of Borbein, Young and Co.; Russ Nixon of Russ Nixon Auto Parts Co., and C. A. Ouis of Authorized Motor Parts as board members.

SEND PROFITS UP . . .

NEW Atlas
"QUICK-CHANGE"
10" LATHE

JOB COSTS DOWN!

Atlas DRILL PRESS

**WITH THESE
WORK-SPEEDING
Atlas TOOLS**



Here's a pair of real profit-makers for any auto shop—big or little! They help you give faster service, handle a greater volume, and bring "outside" jobs inside for the full profit.

There are scores of profitable jobs for an Atlas 10" lathe with time savings up to 90%—bearings, bushings, valves, armature work, electrical service, repair parts. An Atlas drill press gives you fast precision drilling and tapping on repairs and parts.

Ask your jobber how other shops in your area are making money with Atlas tools. Send today for the new Quick-Change lathe bulletin, giving full details on this latest Atlas business-builder.

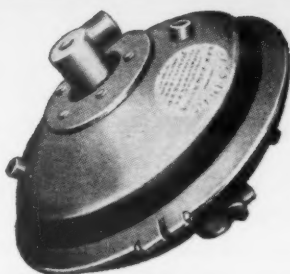
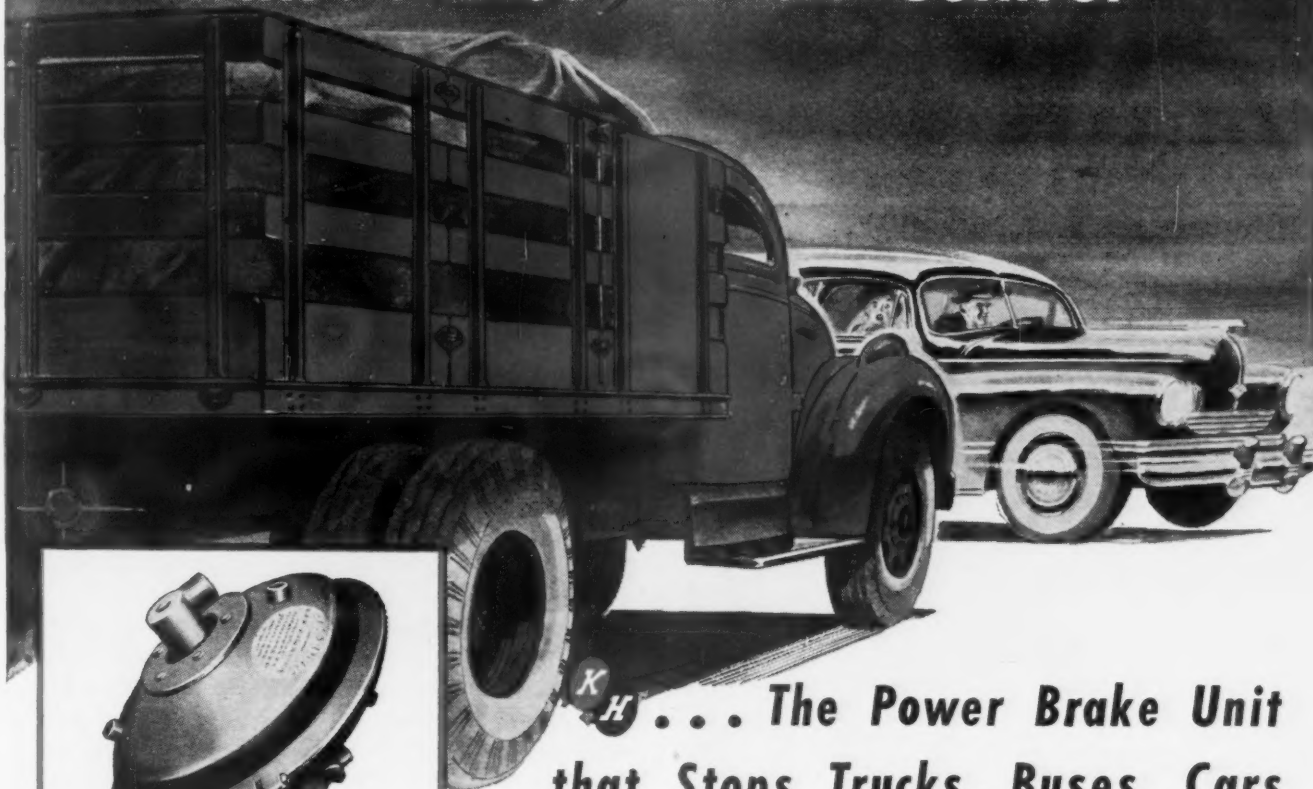


ATLAS PRESS CO. 1288 N. PITCHER ST.
KALAMAZOO 13D, MICH.



"VACDRAULIC" STOPS TRUCKS

with *Feather touch* Control



"VACDRAULIC" SUPERIORITIES

Easier to Operate—smooth, fast, powerful—with perfect "brake-feel" and feather-touch pedal control.

Easier to Mount—connects only to hydraulic line and intake manifold.

Easier to Maintain—only unit with valves and all other moving parts sealed inside—no lubrication; no adjustments—unaffected by dirt, grease, temperature changes or rough use.

**KH . . . The Power Brake Unit
that Stops Trucks, Buses, Cars
Faster—Smoother—Safer!**

Think what happens when loaded trucks can't stop instantly in every emergency! But they can stop safely with the Kelsey-Hayes famous "Vacdraulic" power brake unit. "VACDRAULIC" puts brakes on faster without lag . . . smoother with the "feather-touch" control. "VACDRAULIC" gives truck, bus, and car drivers a perfect "brake-feel" at all times.

Kelsey-Hayes engineers, with years of power-brake experience and "know-how," can show you how "Vacdraulic's" superiorities offer greater protection—per dollar invested. (Write or call.)

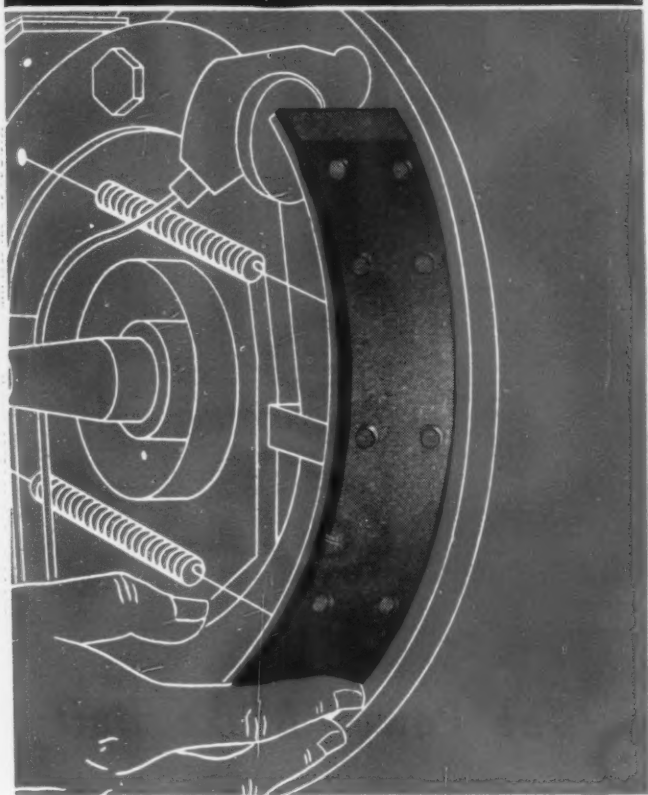


**ASSURES PROVEN PRODUCTS AT...
KELSEY-HAYES WHEEL COMPANY
DETROIT 32, MICHIGAN**



Wheels—Hub and Drum Assemblies • Brakes • "Vacdraulic" Brake Power Units • "Lathan" Vacuum Power Brake Equipment • "Magdraulic" Electric Brakes • For—Passenger Cars • Trucks • Tractors • Farm Implements

No Time Wasted...
No Money Lost When Brakes
Are Relined with **Thermoid**



You save time . . . you make more profit when you reline with Thermoid Brake Lining. Thermoid Brake Sets are custom-built . . . *certified* correct for each make of car by the famous Pittsburgh Testing Laboratory. Thermoid Precision Processing makes every reline job *right the first time*. Troublesome complaints and expensive come-backs are eliminated when you install Thermoid Brake Linings.

Thermoid

Custom-Built Brake Lining Sets Plus "Precision Processing"
Equals Brake Perfection

Thermoid Company • Trenton, New Jersey

Copyright 1947—Thermoid Company

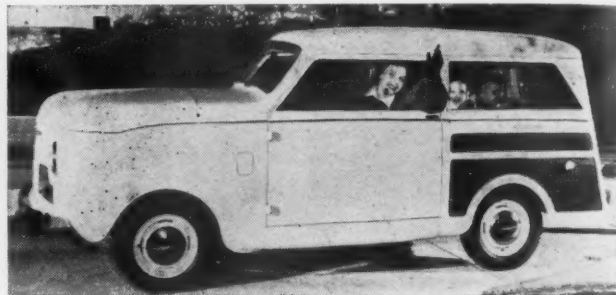
**Thermoid • The Lining
That Gives You The Brakes**

Crosley Adds Station Wagon, Sports Utility and Delivery

All are powered by the Cobra engine

Crosley has added three new models to its line, all based on the standard chassis now used for the sedan and the convertible. These are the Station Wagon, the Sports Utility and the Panel Delivery.

The Station Wagon, priced at \$929 FOB, seats four passengers, or two passengers and a quarter-ton load.



The Crosley Station Wagon

This all-steel model has station wagon panelling on the rear quarter panel and tail gate only, the forward portion of the car is identical with that of the sedan. The tail gate is split into upper and lower halves for loading. The rear seats are removable to provide 26 cubic feet of cargo space.

The Sports Utility, lowest priced car in the line (\$799 FOB), is designed for multi-purpose recreational, farm, commercial and suburban transportation. Available in a choice of colors, this model is a two seater with utility rear section and truck tail gate. Providing the same interior dimensions as the panel delivery truck, it will hold 45.54 cubic feet of space for 500 pounds of cargo, and is fitted with a fabric top. It can be converted into a four-passenger car with the addition of a double rear seat. It is equipped with a permanent windshield and cowl, but can be made completely open if desired. When necessary, it can be completely enclosed with the fabric covering, which snaps on over a light steel framework.

The third model, the panel delivery truck, is a quarter-ton commercial adaptation of the station wagon. All-steel, it lists at \$899, and its two-door body measures 45 in. in width, 38 in. in height and 46 in. in length from the drop tail rear door to the back of the driver's compartment, giving it a carrying capacity of 45.54 cubic ft. The overall length is the same as that of the Station Wagon and Sports Utility, 145 in.

All of these models, like the current sedan, convertible and pick-up, utilize the familiar Crosley chassis and engine. The "Cobra" engine continues unchanged, with overhead valves and camshaft and a power output of 26.5 bhp at 5400 rpm. This engine is built of copper brazed sheet steel and has a five-bearing crankshaft. The compression ratio is 7½ to 1 and the total weight of the engine, with all accessories, is under 150 lbs.

Bureau of Standards Gives Test for Antifreeze Compounds

Owing to the fact that some so-called antifreeze products now on the market have been found, through tests, unsatisfactory and injurious to the cooling systems of automobiles, NADA has sought advice from the National Bureau of Standards as to means and methods by which automobile dealers can be protected against handling these unsatisfactory products.

The advice given was that in any case, where a dealer might be suspicious of the merits of any product, he should request the manufacturer to furnish him a chemical analysis of the antifreeze compound. This analysis should show what type of base the product contains. In absence of this analysis a simple method of determining the antifreeze base follows: If the antifreeze weighs 9 pounds per gallon, exclusive of container, it probably is an ethylene glycol type. If the weight is over 10 pounds per gallon, an antifreeze of the calcium chloride salt type is indicated. Petroleum base antifreezes, however, cannot be distinguished readily from alcohol antifreezes by this means. However, petroleum antifreezes do not mix with water. Instructions on the container consequently state that the entire contents of the cooling system must be drained and replaced with antifreeze. In the absence of other information, pour a little antifreeze into water. If it forms a layer on top of the water and cannot be mixed, it is petroleum. Where antifreeze of petroleum base is used, natural rubber connections should be replaced with synthetic. Severe knocks may take place due to low heat capacity of this product.

During the war, the War Production Board issued an order as of Jan. 20, 1943, prohibiting the manufacture and sale of automotive antifreezes compounded of petroleum fractions, or of inorganic salts (such as, but not limited to, calcium, sodium, or magnesium chloride).

The order issued by the War Production Board, prohibiting the manufacture and sale of certain types of antifreeze, was based on tests made by the National Bureau of Standards and laboratories of automotive industries. These engine tests have shown that "such solutions have highly injurious effects on component parts of the cooling and ignition systems of automotive engines and that inhibitors do not afford protection against corrosion in service. This material will cause serious corrosion of the water pump, radiator and particularly of any aluminum parts, such as cylinder heads. It will cause partial or complete stoppage of water passages especially in the radiator, with resultant overheating. It may leak into the engine cylinders, and if so, will cause great damage to many engine parts. Because rapid erosion of the water pump impeller shaft results from use of such solutions, the solution is soon sprayed over the outside of the engine. Being a good conductor of electricity, the solution short-circuits the ignition system and necessitates replacement thereof.



A Fan Belt That Won't Stretch



**Won't
Slip!**



**Won't
Wear!**

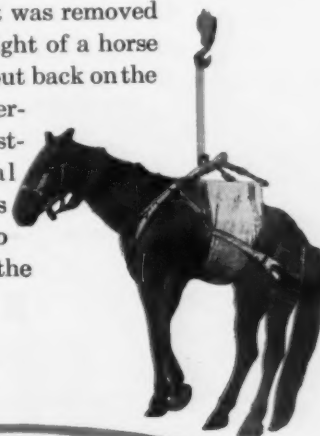


**Won't
Fail!**

Thermoid Fan Belts

are Pre-Stretched!

The life story of a Thermoid Fan Belt is "a horse of a different color". The usual causes of fan belt failure—slipping and wearing—are eliminated by Thermoid's exclusive pre-stretching process. In an actual test a Thermoid Fan Belt was removed from a Buick and the weight of a horse suspended from it. When put back on the car, the belt performed perfectly at the same adjustment! With the special Thermoid belt flipper it's easy to install fan belts, too ...as easy as replacing the cap on a gas tank.

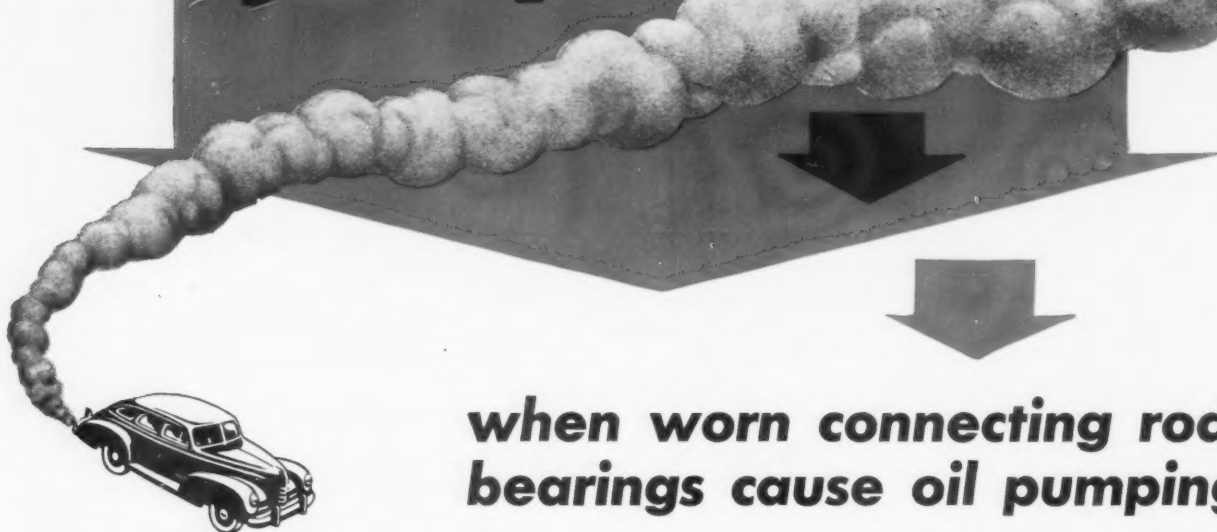


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Thermoid

Thermoidized Pre-Stretched Fan Belts
Thermoid Company, Trenton, New Jersey

Performance goes up in smoke...

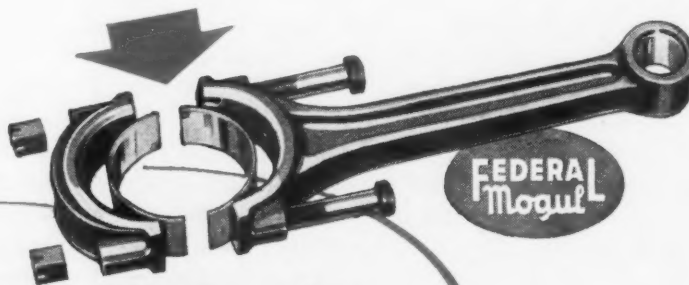


**when worn connecting rod
bearings cause oil pumping!**

Smoky exhaust means oil pumping and sluggish engine performance with high operating costs. Worn engine bearings permit excess oil to enter combustion chambers, where it burns to motor-fouling carbon on the pistons, rings, spark plugs and valves.

One badly worn bearing can oil-starve others, cause costly damage. In every overhaul, check for worn engine bearings, and replace with genuine Federal-Mogul, the bearings *engineered for the job of oil control*, to restore engine power, pep and operating economy!

FEDERAL-MOGUL SERVICE
DIVISION OF FEDERAL-MOGUL CORPORATION
COLDWATER, MICHIGAN



Replace in Sets with Genuine
FEDERAL-MOGUL
Oil-Control Bearings

National Truck Drivers' Championships Held

Two Illinois drivers and one from California took top honors at the national truck drivers' rodeo in Los Angeles to become the 1947 national champions. Sponsored by the American Trucking Association, the rodeo is divided into three classes and winners are rated on the basis of appearance, intelligence and driving skill. Winners of elimination contests in 23 states participated.

Holder of the 1946 crown in the tractor-trailer competition, and also winner in one of the prewar contests, Charles Zimmerman of Cushman Motor Delivery Company, Chicago, chalked up his third championship with 380.51 points out of a possible 400. He drove a Reo tractor and Trailmobile trailer.

In second place was John Winter of the Dohrn Transfer Company, Rock Island, Illinois, with 348.125 points. He also was behind the wheel of a Reo tractor, pulling a Trailmobile trailer. Third, with an International-Fruehauf combination, was Don Lyall, of Fort Dodge, Iowa, with 336.6.

Alex Adamski of the George F. Alger Company, Chicago, who placed second last year in Chicago, won the straight truck event in a Reo unit with a score of 385.51 points.

Second to Adamski by less than a point was his "team-mate" Norbert Totzke, also of the Alger Company's Chicago office, who scored 385.00 points driving a Reo truck. Third place position went to Leo Premier of Trucking Incorporated, Detroit, Michigan, in a Chevrolet with 368.15 points.

Californian Chester Smith of the Reliable Transfer Company of Los Angeles, driving a Reo, led in the truck and full trailer event with a score of 332.5.

Next to Smith came Kenneth Clay of Associated Truck Lines, Grand Rapids, Michigan office who scored 306.75 in a Reo while third place was taken by Ed Karls, Hopper Truck Line, Scottsdale, Arizona, with a 292.00 score behind the wheel of a Kenworth.

Winners were presented with their awards by Ted V. Rodgers, past president of the ATA.

Sensational Seat Cover News! For the First Time in History

'48 Models in 48 Hours..

Another sensational "first" now puts Rankin dealers still further AHEAD OF THE PARADE, in seat cover profits! For the first time in the industry, we have just completed plans whereby . . .

. . . within 48 hours of the time car manufacturers announce their new '48 models,

. . . Rankin seat covers will be rolling off the production lines, custom-tailored to the exact specifications of each of these new '48 cars.

Result—Rankin dealers will be weeks and MONTHS ahead of competition—again FIRST with the BEST, as usual.



For full details on this great, new forward step in seat cover merchandising, write us today on your letterhead (no sales to chains or cut-price houses).

RANKIN MANUFACTURING COMPANY • CEDAR FALLS, IOWA

PERFECT FIT

*in the hand
and on the
nut !*



New Britain

BOX AND OPEN END WRENCHES

There's something in the way these superlative Tools fit in your hand... something in their lightly balanced feel of strength that makes you *more certain* of your work.

Pick up one of these fine wrenches. Set the precision broached box end or accurately milled open end jaws on the nut. Note the sweet, clinging fit... sign of famous New Britain precision. Now, pull!... and feel through slim shanks of forged alloy steel the no-slip tug at the work! Positive knuckle and job insurance... that's what New Britain gives you with these superior hand tools.

Every New Britain box end, open end or combination type Wrench, in the full range of standard sizes, is engineered for slimness to reach and work with ease in those "hard-to-get-at" places. New Britain manufactures them with one eye on your jobs, crams them with utility that marks them unmistakably as part of the famous money-making New Britain Line of Greater Strength—Better Fit... today's highest quality hand tools! The New Britain Machine Co., New Britain, Conn.



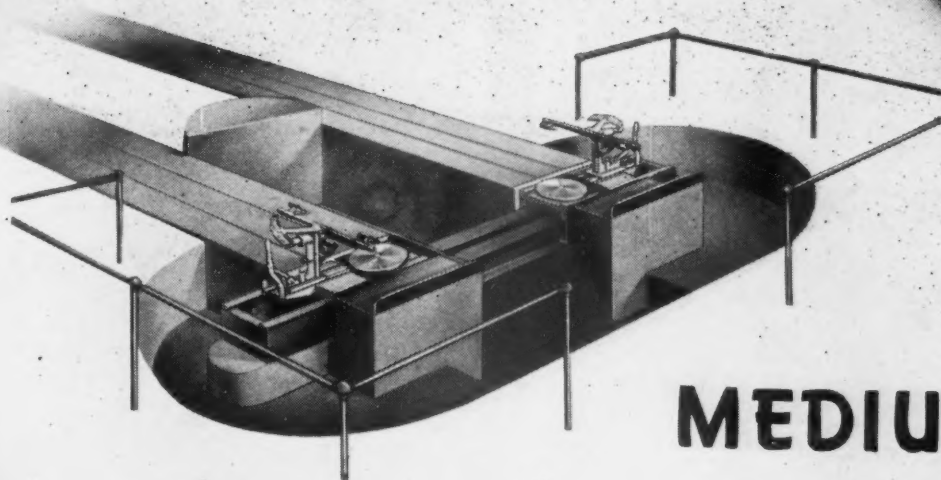
The complete New Britain Line for Automotive, Aircraft, General Maintenance & Production Needs is sold by leading Jobbers.

New Britain

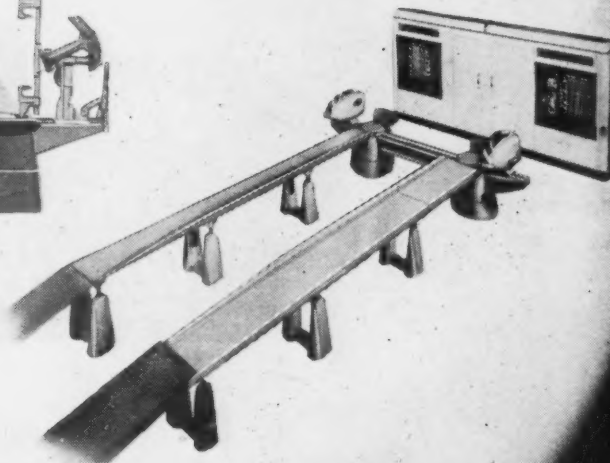
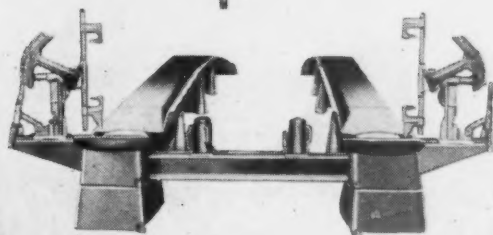
GREATER STRENGTH • BETTER FIT

HAND TOOLS

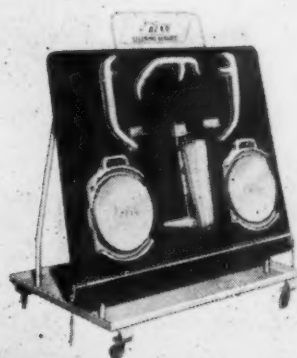
LARGE



MEDIUM



or SMALL



John
BEAN

WHEEL ALIGNERS AND CORRECTION TOOLS

WHEEL BALANCERS AND BALANCING TOOLS

WEIGHTS - CAR WASHERS - STEAM CLEANERS

BUILDS FOR ALL

Surveys show that more than 10% of the automobile service dollar is spent for wheel aligning. Regardless of your volume or the size of your shop, you need a complete wheel aligning department.

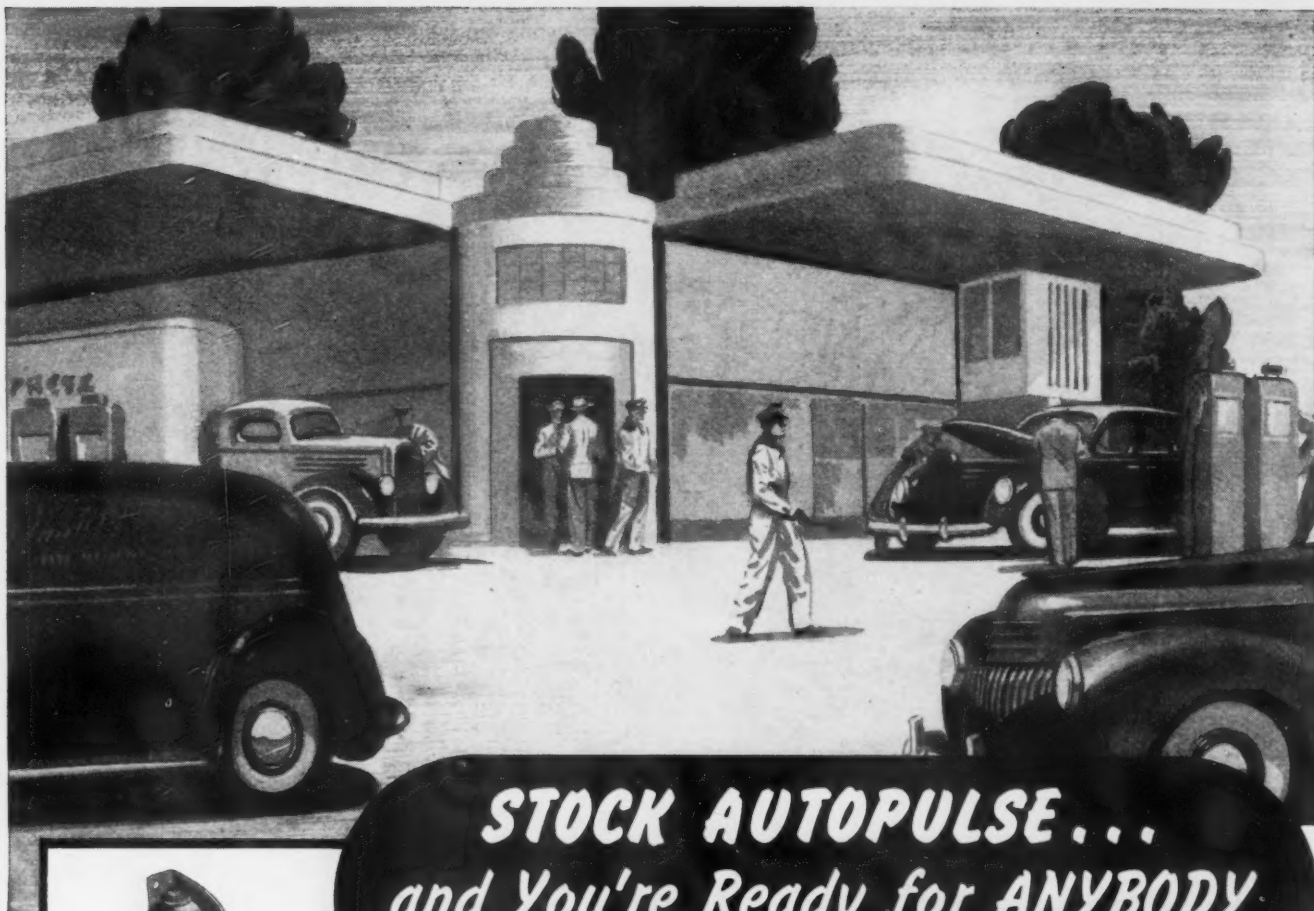
John Bean Wheel Aligners range in size from large pit models to a portable wheel alignment department that occupies only 3 x 4 feet of floor space. All models are ruggedly constructed precision instruments. Readings are direct . . . Castor, Camber, Kingpin angle, Toe and Steering Geometry are determined quickly and accurately.

Ask your jobber or write us for full information . . . John Bean Wheel Alignment Equipment is TAILORED TO FIT YOUR NEEDS.

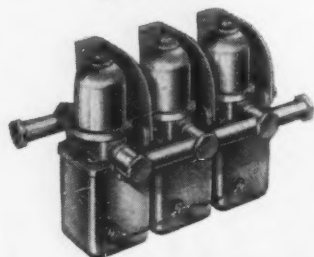
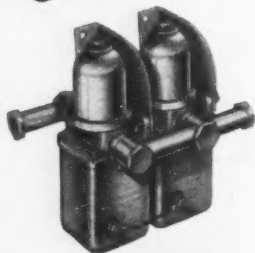
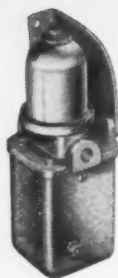
JOHN BEAN MFG. CO.

DIVISION OF FOOD MACHINERY CORPORATION

LANSING 4, MICHIGAN



STOCK AUTOPULSE...
*and You're Ready for ANYBODY
 Who Needs a Fuel Pump*



You don't need a big stock of fuel pumps. You are ready for all comers if you stock Autopulse.

Autopulse Electric Fuel Pumps in single or multiple units will fit any truck, bus or car and handle any kind of liquid fuel in any climate or altitude in the world.

Autopulse Fuel Pumps do a better job—are easier to install—are always satisfactory to the user.

Standardize on Autopulse—and get rid of heavy inventory in Fuel Pumps.

2877

And the price is the same as before the war

AUTOPULSE Corporation
 LUDINGTON, MICHIGAN

LOOK TO ALLEN FOR THE *Best* IN TUNE-UP EQUIPMENT



MODEL
E-300

MODEL
E-316

Look to Allen because Allen has been first in the manufacture of scientific tune-up equipment since 1921, pioneering testing techniques and equipment used throughout the world. Now Allen takes another great stride forward with the New Allen Motor Analyzer and the New Allen Syncrograph. Superbly styled in sand, cream and chrome, these new Allen testing instruments will mark your shop as the modern shop . . . *the shop that's out in front.* See this wonderful new equipment at your jobber's soon.

ALLEN COURSE AGAIN AVAILABLE—The Allen Course, "Modern Engine Tune-up," which trained thousands of civilian and army mechanics in modern engine tune-up procedure is again available. Ask your jobber for details.

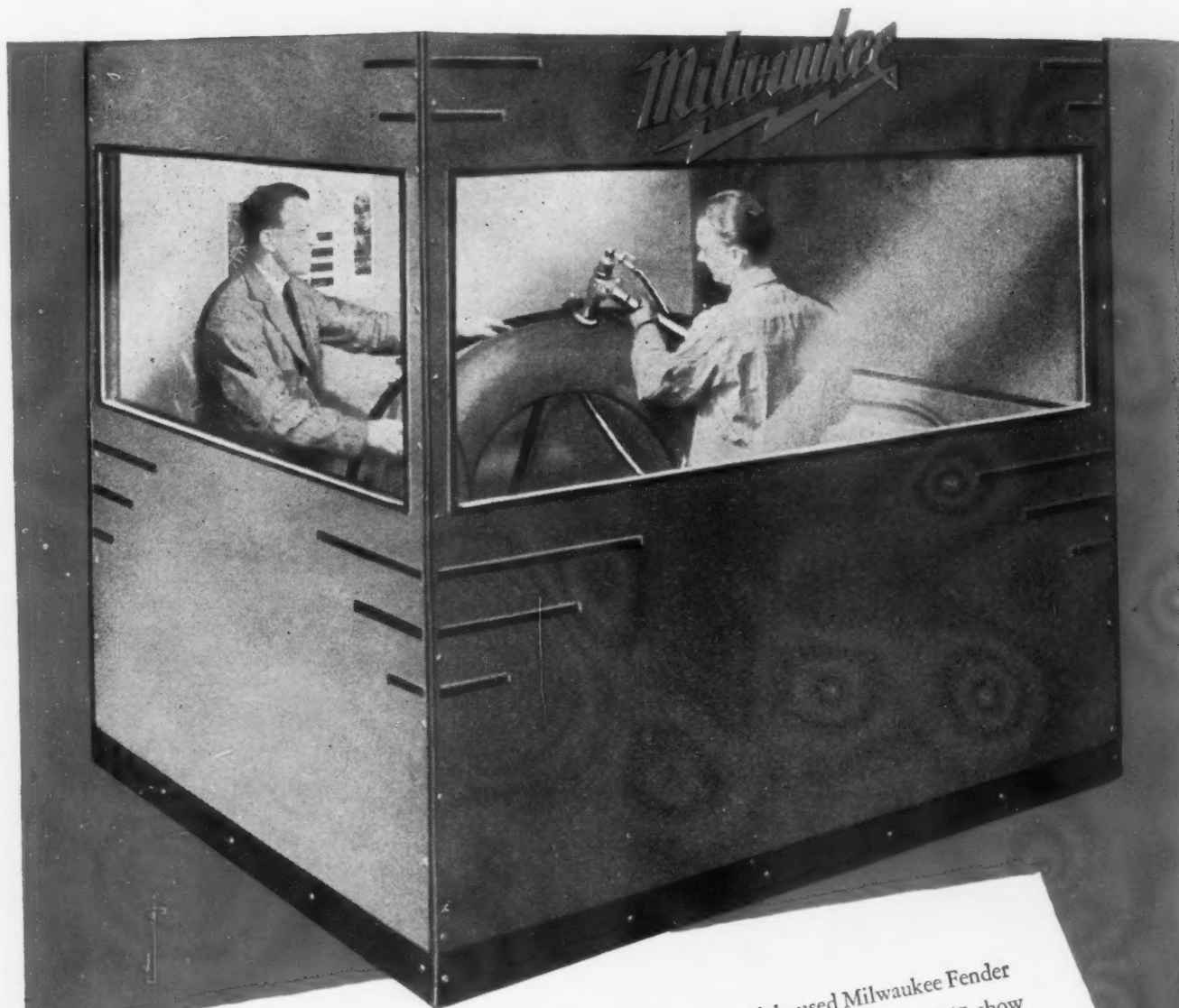
ALLEN ELECTRIC AND EQUIPMENT COMPANY
2326 NORTH PITCHER STREET • KALAMAZOO 13, MICHIGAN

MOTOR ANALYZING EQUIPMENT • BATTERY CHARGERS • TUNE-UP EQUIPMENT • WELDING EQUIPMENT

DRAMATIC DISPLAY

at the A.S.I. Show

Actual job-demonstration of well-known
Fender Hammer, in SOUND-PROOF BOOTH



BEHIND sound-proof walls of plastic and glass, the widely-used Milwaukee Fender Hammers were "job-demonstrated" before thousands attending the 1947 show of the Automotive Service Industries, Navy Pier, Chicago. This performance-exhibit was a center of attraction because of its interest and novelty.

LOOK INTO THIS: We want you to find out for yourself how the Milwaukee "NO-NICK" Fender Hammer can make money for you. The "14 for 5" Trial Plan gives you this opportunity—write us for complete information, include name of your jobber, Milwaukee Electric Tool Corporation, 5324 W. State St., Milwaukee 8, Wis.

SHOW IT...SELL IT...PROFIT!

Saginaw
RECIRCULATING-BALL

BUMPER JACK

GIVES YOU EXTRA PROFIT

Handle can't spin
while car
is being lowered!

No fluid to leak—
nothing to get
out of order!

Easy as Car Steering!
Built by maker of steering
gears for America's leading
cars, this jack takes no more
effort than steering a car—a
child can use one.

**Rust-proofed!
Dirt-protected!
No danger of
age-deterioration!**

**Pressed-steel frame
—solid—rugged!**

**Sturdy bracket
—firm-fitting!**

Compact, precision product!
Dependable... long-lasting
... and trouble-free!

NEW, AIRPLANE PRINCIPLE!

Rolling balls, inserted between
threads, reduce friction
and increase efficiency.
The balls recirculate
through a special race-
way. Proved on Army
airplanes to actuate
wing flaps, etc.



**Wide-area base
assures firm solidity**

This revolutionary jack is piling up easy profits for dealers everywhere... and here are two of the many reasons:

- (1) The new Saginaw Recirculating-Ball Bumper Jack is *proved* the *easiest*, *safest*, most *dependable* jack ever developed. It's entirely new—there's no other jack on the market like it.
- (2) Today there is the *biggest demand in history* for such an easy-to-use, reliable jack.

Further, this Saginaw Recirculating-Ball Bumper Jack is simple to sell—the many advantages can be seen at a glance! Selling boils down to just this: “*Show it, you sell it... sell it, you profit... big!*”

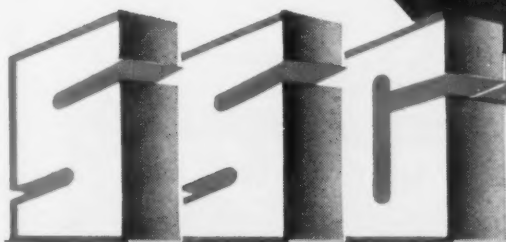
Get your share of this easy, *extra* profit—see your United Motors distributor *today*.

**THE SAFEST...EASIEST...STURDIEST
BUMPER JACK EVER DEVELOPED!**

**... for extra profits, just show
it to every customer**



Saginaw Recirculating-Ball Bumper
Jacks are available through United
Motors distributors. Call yours today!



Saginaw
STEERING GEAR DIVISION
General Motors Corporation, Saginaw, Michigan

PRODUCTS

STEERING GEAR ASSEMBLIES • STEERING LINKAGE ASSEMBLIES
PROPELLER SHAFTS • DIESEL ENGINE AND AIRCRAFT PARTS

THE CLEATS DIG IN FOR BETTER TRACTION

Campbell Lug-Reinforced Tire Chains
give better traction and longer life!



Like the cleats on the soccer player's shoes, the exclusive, patented* saw-tooth lugs of Campbell Lug-Reinforced Chains dig right into ice and snow for the grip that means quick starts and safe stops—they put an end to dangerous slip and skid. The tough, long-wearing steel and one-piece construction mean increased mileage. For your profit—and your customers' safety—feature Campbell Lug-Reinforced Tire Chains. International Chain & Mfg. Company, York, Pennsylvania.

* U. S. Pat. No. 2,093,547—Canadian Pat. No. 223,568



PROFITABLE WELDING

WITH *Easy to Operate*

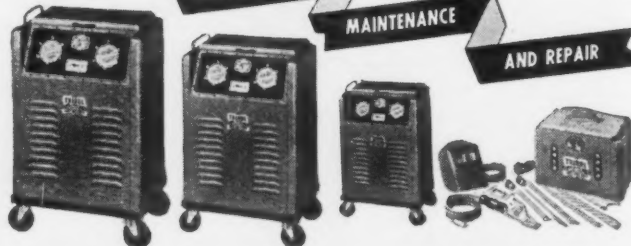
TRINDL SUPER INDUSTRIAL
ARC WELDERS

FOR PRODUCTION

CONSTRUCTION

MAINTENANCE

AND REPAIR



A Range of Models for Every Welding Job!

"JOB-TESTED" TRINDL WELDERS, outstanding in the welding field because of the Simplified Operation and Ruggedness of Design and Construction, are unbeatable for practical efficient low cost operation. TRINDL WELDERS, preferred for general industrial, farm and automotive production, construction, maintenance and repair, are available in a range of models for every type of shop or welding job.



DEPENDABLE TRINDL WELDERS, WELDING SUPPLIES AND ACCESSORIES ARE AVAILABLE TO SAVE YOU BOTH—TIME AND MONEY . . .

Write, wire or phone today for particulars and catalogs. JOBBER AND DISTRIBUTOR INQUIRIES INVITED. Write for Selected Distributor Plan.

TRINDL PRODUCTS LTD., 17 E. 23rd St., MA, Chicago 16, Ill.

PARTS CLEANING AT ITS BEST!

You can save time and money by using fast-working Oakite degreasing and derusting materials on your motor repair jobs.

That's because you spend less time cleaning . . . more time on repair work. Make inspection and repair easier by bringing your work out from under the veil of oil, grease, dirt and muck. Remember, too, water-mixed Oakite cleaning materials, are fire-safe!

FREE on-the-spot SERVICE!

Phone your nearby Oakite Technical Service Representative for FREE help on any cleaning job!

OAKITE PRODUCTS, INC., 24C Thames St., NEW YORK 6, N. Y.
Technical Service Representatives in Principal Cities of U. S. & Canada

MATERIALS
METHODS
SERVICE

OAKITE
REG. U. S. PAT. OFF.

Specialized Industrial Cleaning



Architect: Victor L. Charn, Chicago



● Clear doors of Tuf-flex tempered plate glass add a touch of smartness to your showroom.

A Sidewalk Auto Show— with a Visual Front

A Visual Front is an invitation to "come in and look them over". It opens up the showroom . . . directs attention to the attractive, new cars.

This Visual Front has the following advantages:

1. A breath-taking expanse of plate glass permits the cars to be seen from many angles. It floods the showroom with daylight—at night presents an impressive display.
2. A low bulkhead makes the person

on the sidewalk feel as though he were inside the room.

3. Tuf-flex* tempered plate glass doors complete the visual effect, make the showroom more inviting.

Your architect can use glass to achieve many desirable results. Vitrolite* glass facing to frame the front in color. Thermopane*, the metal-to-glass sealed insulating unit, for heating economy and greater freedom from condensa-

tion on windows. Mirrors to make a small showroom look larger. Blue Ridge Patterned Glass to separate offices from display areas. Glass keeps its luster year after year. . . . cleans easily with water and squeegee.

Write for your copy of our Visual Fronts book. It's full of colorfully illustrated ideas that you and your architect can use or adapt to your needs. Libbey-Owens-Ford Glass Company, 69127 Nicholas Building, Toledo 3, Ohio.

*®



LIBBEY • OWENS • FORD
a Great Name in **GLASS**



Talk to

AUTOMOTIVE ENGINEERS

They're the men who have made Guide Sealed Beam units original equipment on more new cars, trucks and buses than any other make.



Talk to **CAR OWNERS**

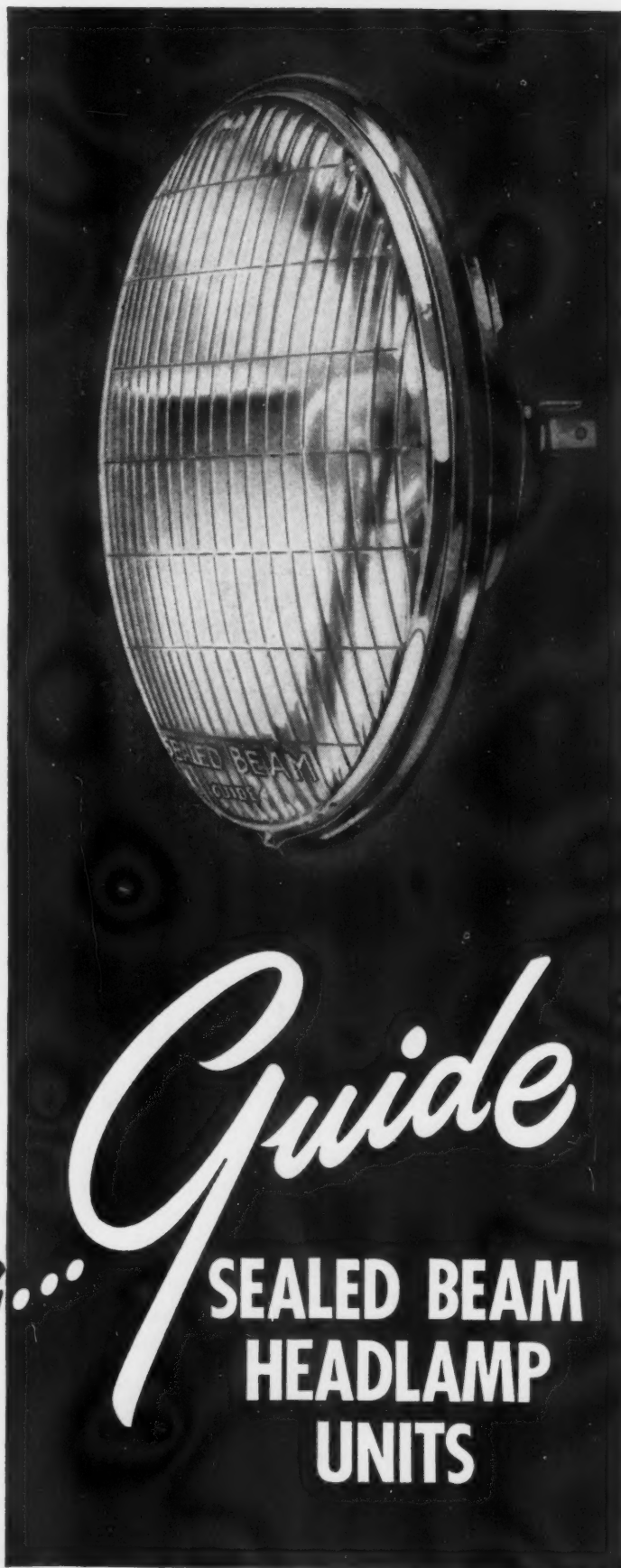
They go for the *double* protection of Guide Sealed Beam units . . . a long life with NO DIM-OUT—NO BLACK-OUT if a lens is cracked.



Talk to **SERVICEMEN**

They'll tell you that breakage is minimized and installation made easier by the sturdy metal reflector construction and locating lugs.

They all prefer...



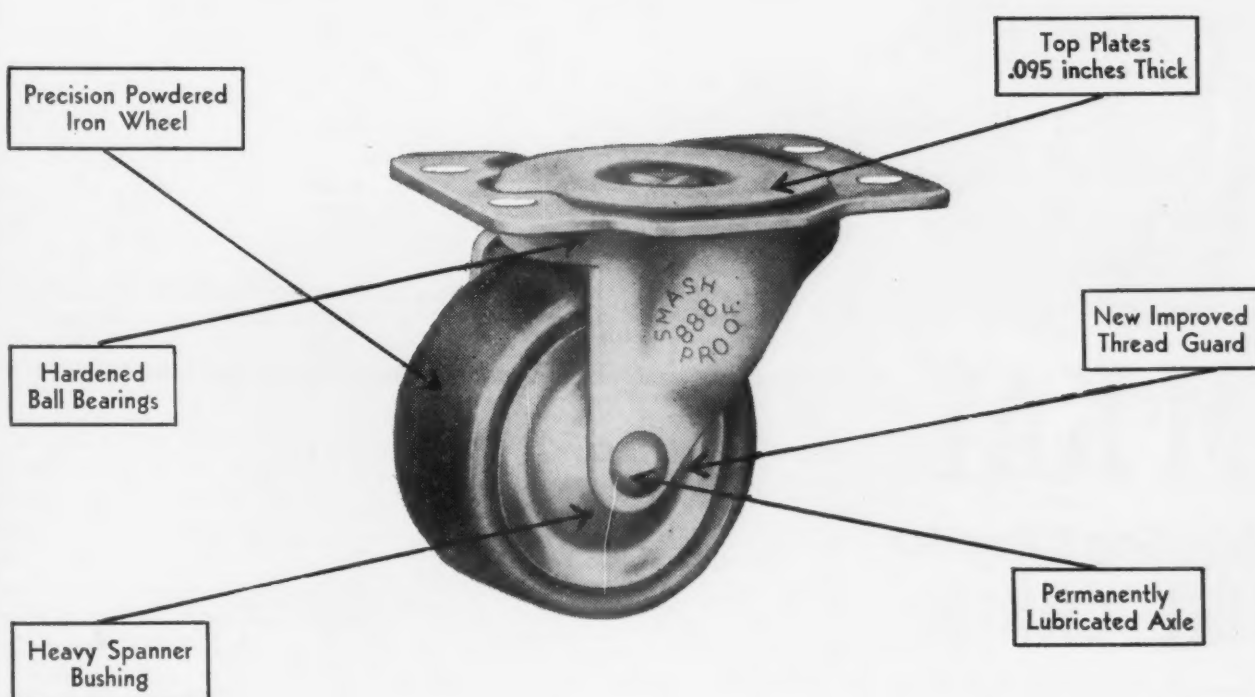
Guide
**SEALED BEAM
HEADLAMP
UNITS**

GUIDE LAMP—A UNITED MOTORS LINE
Available Everywhere Through
UNITED MOTORS DISTRIBUTORS



Announcing the **NEW** No. 888

Smash-Proof CREEPER CASTER

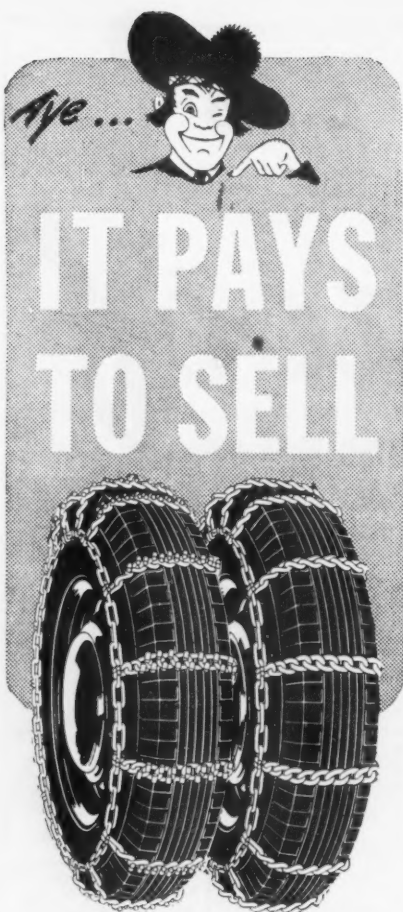


NO MORE WOBBLY WHEELS! NO MORE STUCK SWIVELS!
AT LAST WE HAVE PERFECTED A CREEPER CASTER THAT WILL STAND
UP FOR YEARS OF NORMAL USE

Our new wheels are made of imported Swedish powdered iron.
These are not only precision made but much more durable than
the ordinary cast iron

— SOLD BY ALL LEADING AUTOMOTIVE JOBBERS —

HULBERT MANUFACTURING CO. ♦♦ Ashtabula, Ohio



McKAY

Multi-Grip & Regular TIRE CHAINS

Sales-wise dealers build profitable volume by handling McKay Multi-Grip and Regular Tire Chains. That's because McKay Chains are the first choice of the careful buyers for dependable traction and longer wear.

There's plenty of "tire chain weather" ahead... so start NOW to sell fast-selling McKay Tire Chains, Cross-Chains and Accessories.

Easy to Put On • Hard to Wear Out



THE McKAY COMPANY

462 McKAY BUILDING

PITTSBURGH 22, PA.



Just Out!

A snappy two-color merchandiser that gives you 18 3 oz. cans (individual refills) of EIS Super "40" Brake Fluid — famous as "The pioneer of better brake fluids."

Pull in those good **EXTRA DOLLARS!**

THE dollars you pull in, outside of your regular service and repair work, help to boost the year's profits. There are plenty of these good extra dollars in the re-designed and improved merchandisers for EIS Individual Brake Fluid Refills. The sound advice printed on this carefully designed "silent salesman," if followed properly, will get you your share of this business.

Ask your jobber to show you this and other profit-building merchandisers specially planned for YOU.

THE EIS AUTOMOTIVE CORP.
MIDDLETOWN, CONN.



Ford Appoints Carll Public Relations Head

Appointment of Charles E. Carll as Director of Public Relations of Ford Motor Company was announced recently by Henry Ford II, president.

Carll, who had been an executive on Midwest and Eastern newspapers, first joined Ford in 1942, remaining there until late 1943. He returned in the fall of 1944 as head of the Ford News Bureau, a post which now will be taken by John L. Rose of the News Bureau staff. Rose was a former United Press staff correspondent and city and sports editor on various Midwest newspapers.

The Public Relations Department will include the News Bureau, Community Relations, Graphic Arts and Guest Relations sections.

Ford also announced that R. E. Roberts, who has been director of Management Relations, will head the newly-formed department of Employee Relations. In addition to Management Relations, this department will supervise employee

publications and other employee activities, and will come under direction of John S. Bugas, vice-president and director of Industrial Relations.

Publication of the *Ford Times* and the *Ford Dealer News* will continue to be supervised by William D. Kennedy.

D-20—Wayne Compressor Produces Small Units

A series of small air compressors, 1/3, 1/2 and 3/4 hp single stage, with capacities ranging from 1.5 to 3.5 cfm has been introduced. These units replace an earlier series, and incorporate an eccentric drive of the type long used in household refrigeration units. Unusually large bearing surfaces and large pistons combine, according to the maker, to give longer life with less wear. Mounted on a vertical tank, each compressor comes complete with check valve, safety valve, pressure control switch, tank drain and all controls necessary for completely automatic operation.

(For further information use coupon on p. 62)

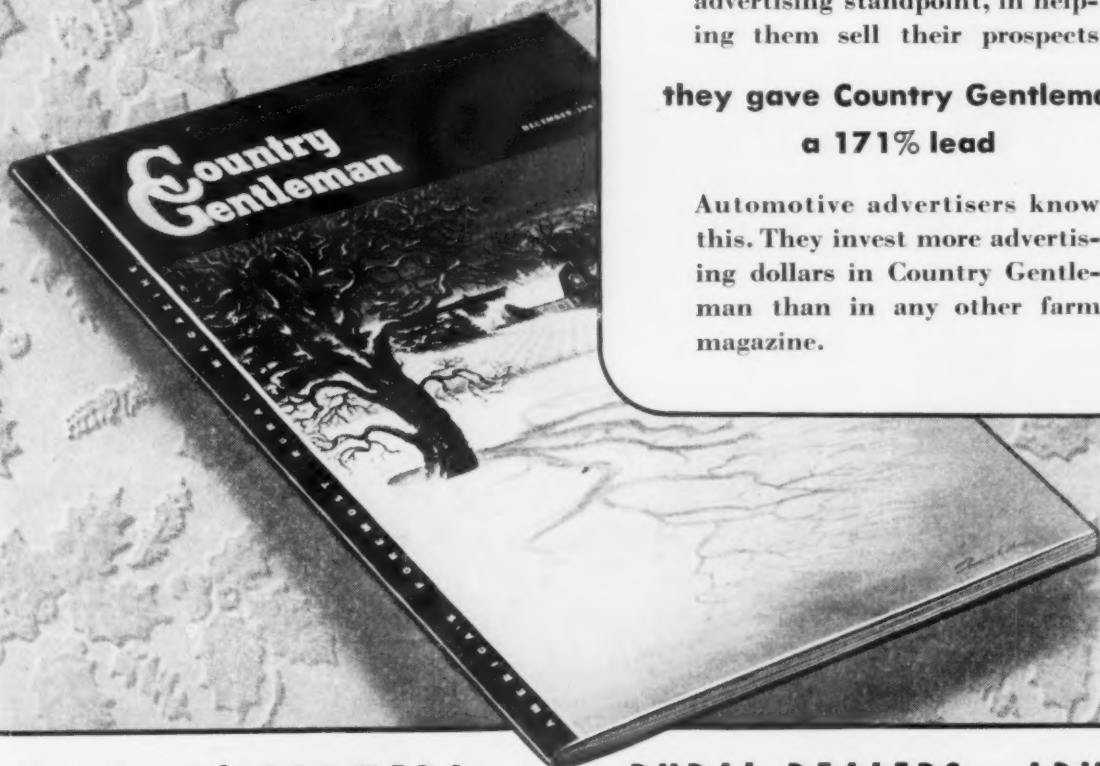
**YOUR BEST RURAL
CUSTOMERS READ**

Country Gentleman

Rural auto dealers know this.
Asked what rural magazine
would be most effective, from an
advertising standpoint, in help-
ing them sell their prospects

**they gave Country Gentleman
a 171% lead**

Automotive advertisers know
this. They invest more advertis-
ing dollars in Country Gentle-
man than in any other farm
magazine.



No. 1 with FARMERS •

RURAL DEALERS • ADVERTISERS



DeVILBISS

Spray-Painting Equipment—
Spray Booths—Exhaust Fans
— Air Compressors—Hose and
Hose Connections—Oil Guns.
See your authorized DeVilbiss distributor
THE DEVILBISS COMPANY
Toledo 1, Ohio

SPINNING POWER

a Companion Product
of Full Spark Plugs
GLOBE-UNION INC.
MILWAUKEE 1, WIS.



LIFETIME

Guaranteed

**INTERNATIONAL PARTS
Mufflers**
SUPER
SILENCING
INTERNATIONAL PARTS CORP., CHICAGO 5, ILL.
INTERNATIONAL PARTS (CANADA) LTD., TORONTO

THE COMPLETE LINE
that
Completely Satisfies

Since 1906

The
Fitzgerald Mfg. Co.
Torrington, Connecticut



Fitzgerald
GASKETS

IT'S TIME WE GOT A
GRAY-MILLS AGITOR
PARTS CLEANER



The boss is right. An Agitor will save you up to 150 cleaning hours a year per man! Send for catalog today and get all the facts. Gray-Mills Corp., 1943 Ridge Ave., Evanston, Ill.

Storm-Vulcan Appoints T. L. Kidd Sales Manager

T. L. (Larry) Kidd has been appointed National Sales Manager for Storm-Vulcan, Inc., Dallas, Texas—manufacturers of automotive engine rebuilding machines—according to A. L. Barnett, president. Storm-Vulcan, Inc., operates plants in Dallas, Texas, and Minneapolis, Minn.

Kidd has been in the automotive equipment sales business with the L. D. Tuttle Co. for the past 17 years, rising to Southeastern Sales Manager with headquarters in Atlanta, Ga. The L. D. Tuttle Co. is sales representative for Storm-Vulcan in the southern states.

Kem Plant Moved To New Jersey

J. D. Brown, president of Kem Manufacturing Company, Inc., announces that their plant has been moved to larger and newer buildings at River Road in Fair Lawn, N. J. (just east of Paterson).

Kem's buildings and grounds cover an area of over 100,000 square feet and provide expanded space for the plant, tool and die room, shipping, general and executive offices and stock. The convenient location of this new Kem plant in Fair Lawn is augmented by easy trucking facilities and border on two railroads. By car, Kem's new plant can be reached in 30 minutes from New York via Lincoln Tunnel or George Washington Bridge.

Because of this move the company expects to be able to expedite both production and shipping.

Classified Advertisements

Parts for Delco and Westinghouse Light Plants. Buy from manufacturer. Republic Electric, Davenport, Iowa. Catalog.

MANUFACTURERS OF
AUTOMOTIVE ACCESSORIES
CAN USE ANOTHER GOOD ITEM FOR
DISTRIBUTION TO ACCESSORY DEALERS
AND SERVICE STATIONS, NEW
ENGLAND TERRITORY. MUST BE
VOLUME ITEM ON EXCLUSIVE BASIS.
MOTOR AGE BOX 33.

SALESMEN AND DISTRIBUTORS
WANTED TO SELL HIGH GRADE
PLASTIC AND FIBER SEAT COVERS.
IMMEDIATE DELIVERY. DREXLER
MANUFACTURING COMPANY, 365
MARIETTA ST., ATLANTA, GA.

ignition-fritz

For Auto Owners,
Mechanics, Truck
Drivers, Farmers and
all gasoline engine
users. Sells on sight.



LITTELFUSE
Incorporated

4757 N. RAVENSWOOD AVE., CHICAGO 40, U. S. A.



**USE PURITAN
GASKA-SEALS**

No. 1, 2 and 3



USE
PROVED
IGNITION
PARTS

**QUALITY TELLS
DEMAND WELLS**

WELLS MFG. CORPORATION
FOND DU LAC, WIS.

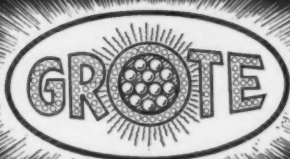


HYGRADE
REPLACEMENT PARTS

CARBURETOR & FUEL PUMP PARTS
SPEEDOMETER CABLE AND CASING
SHOCK LINKS AND BUSHINGS
FUEL LINES AND FITTINGS

HYGRADE PRODUCTS DIVISION
STANDARD MOTOR PRODUCTS, INC.
35-35 Thirty-fifth St., Long Island City 1, N. Y.

for **SAFETY**
REFLECTORS • LAMPS • FLARES

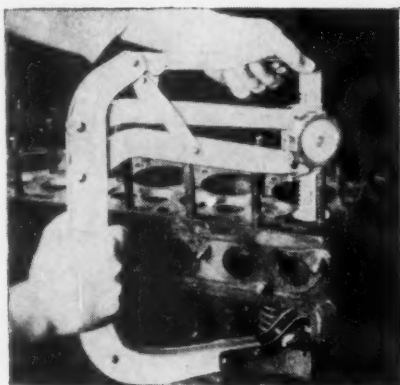


GROTE Manufacturing Company, Inc. Bellevue, Ky.
Automotive Sales Office: Moorestown, N. J.

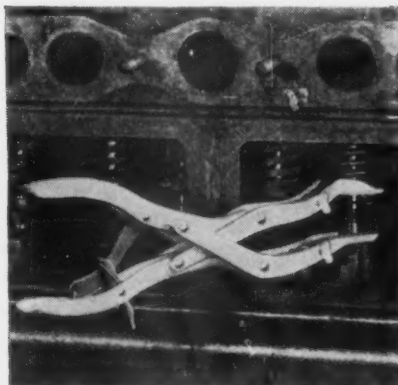
K-D® Tools make hard jobs easy

HERE ARE A FEW ON THE JOB

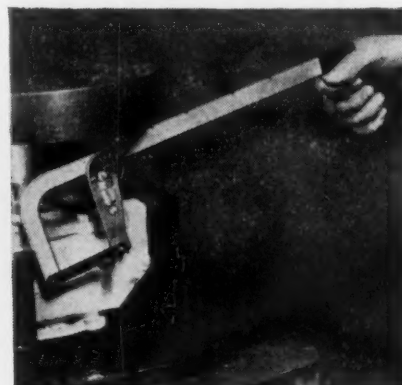
(Ask for complete catalog)



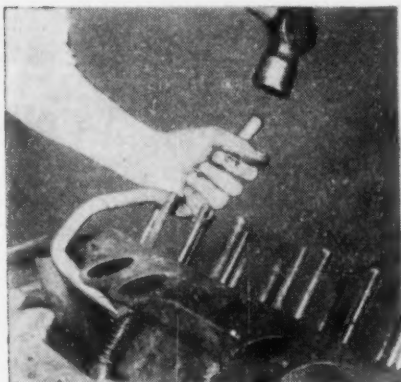
Popular K-D 380 Compressor raising a valve. Fast, one-man operation.



Old favorite K-D 600 Lifter raising valve. For nearly all L-heads.



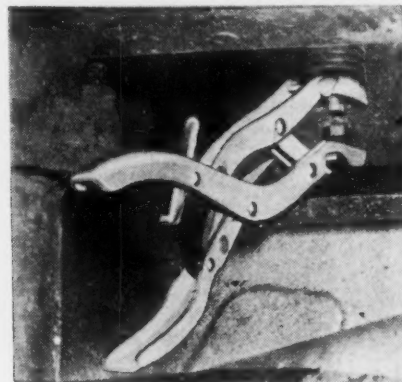
K-D 99 Hacksaw "cuts around corners" with quick change to short blades.



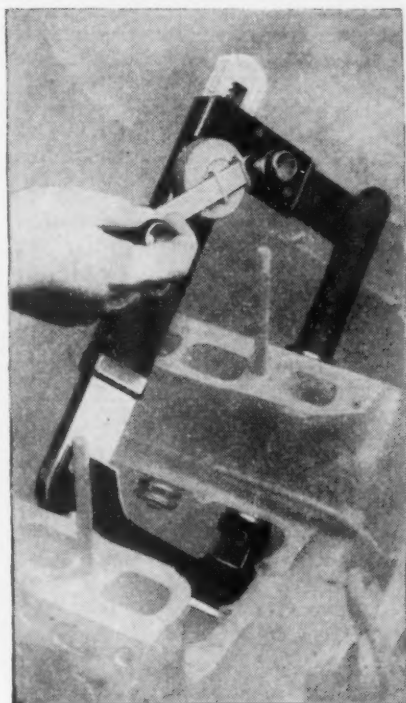
Removing Ford retainers with K-D 917 Driver. 917 and 918 Puller make 920 set.



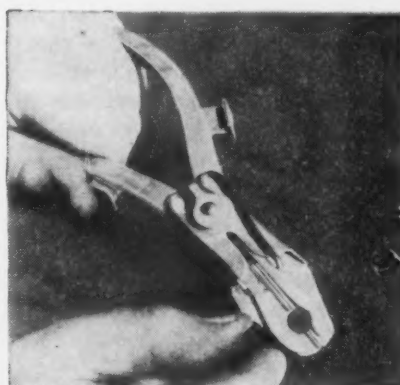
K-D 918 Puller on a Ford. Pulls any tight assembly. Part of 920 set.



K-D 900 Lifter raising valve—manifolds in place. Note clear view.



K-D 335 for Cadillac. One-man operation. 335 and 336 make 337 set.



Easy loading K-D 605 or 336 Keeper Inserters. 336 part of 337 Cadillac set.



Raising spring on late Buick with K-D 385 Compressor. Also for small L-heads.

good, reliable



K-D TOOLS



"Accelerate in '48"

K-D MFG. CO., LANCASTER, PA.



Whiz
TUNE UP
with
MOTOR RHYTHM

A PRODUCT OF **Hollingshead**
LEADER IN MAINTENANCE CHEMICALS



... For Faster and More Accurate BATTERY TESTING

IMPERIAL "K"
No. 515-T
BATTERY HYDROMETER

- ★ Thermometer Type
- ★ Shatterproof Glass Jar

ORDER FROM YOUR JOBBER

THE IMPERIAL BRASS MFG. CO.
1217 W. Harrison St. Chicago 7, Ill.

COIL ACTION KITS

Announcing a complete new line of front wheel coil action pivot pin kits. 28 numbers to fit all popular cars. Attractively boxed and labeled. Write for catalog sheet. VAN Parts are sold thru leading Jobbers. If your Jobber can't supply you, write and give us his name.

VAN BERGEN & GREENER, INC.
1619 N. Hayne Ave., Chicago 47, Ill.

356 Venable N.W. 2727 Oak St. 2306 N. 15th St.
ATLANTA KANSAS CITY PHILADELPHIA

Manchester Named Sales Head of Edison Division

Thomas A. Edison, Incorporated, of West Orange, New Jersey, has appointed A. A. Manchester as sales manager of its newly formed Automotive Division. Products include batteries, spark plugs, magnetos and other automotive products.

Manchester has been associated in various capacities with Edison for the past 27 years, the last ten of which were as sales manager of the now dissolved Emark Division of Edison.

He is a member of the National Federation of Sales Executives, the Northern New Jersey Sales Executive Club and the Association of American Battery Manufacturers.

Important Fleet Test Run By Petroleum Industry

The petroleum industry hopes to get a final answer on the much discussed question of whether sulphur is an undesirable element in gasoline as a result of extensive Department of the Army tests being conducted by seven commercial fleets. Trucks of all types and passenger cars, some 62 vehicles in all, are to be used by the fleets. The tests are to be run under all conditions and will utilize various classes of special fuels. About 1½ million vehicle miles will be run to determine optimum sulphur content. Results will determine sulphur content in gasoline specifications for both Army and Navy as well as other government agencies. Primary reason for using commercial fleets in the tests is that more normal conditions can be approximated than if they were held at Fort Knox as originally planned.

There is a difference

D & T
ENGINEERED
WHEEL WEIGHTS
TURNER MFG. CO.
Kokomo, Indiana

WEED

SELL • SERVICE •
• REPAIR •
TIRE CHAINS

Always Recommend
WEED AMERICAN
V BAR-REINFORCED

The Best Buy in

TIRE CHAINS



CARBUSOL
CLEANS
Pistons,
Carburetors,
Fuel Pumps —
FASTER!

5 GAL. \$11.50
DEALER'S NET

The KLEER-FLO Company • N. Y. 19, N. Y.
Sold by leading Automotive Jobbers Coast to Coast

MAREMONT HAS WHAT IT TAKES

MUFFLERS — TAILPIPER
ALLOY STEEL SPRINGS

MAREMONT AUTOMOTIVE
PRODUCTS, INC.
So. Ashland at 16th St.
Chicago 8, Illinois

You Can Rely On

FRENCHTOWN INSULATORS

Used by more spark plug manufacturers than any other.

FRENCHTOWN PORCELAIN CO.
81 Mulrhead Ave., Trenton, N. J.
(Factory: Frenchtown, N. J.)

Genuine
SERVICE
INDIANAPOLIS
"Measurably Better"
SPRINGS

SERVICE SPRING COMPANY
INDIANAPOLIS 6, INDIANA

"As Is" Desludging Is Profitable!

**Make Up to \$8.00 Per Job
With Magnus 755**

Once a car owner sees what sludge looks like, even though he's been lucky enough not to have paid through the nose for repair work or maintenance caused by it, he is easily sold on a desludging job.

There's a nice profit for you on every one of these jobs when you use Magnus 755 for desludging. No labor . . . no tear-down. Just drain the oil from the car and replace it with Magnus 755. Idle the engine *outdoors* for an hour, then drain the #755. Flush with flushing oil, drain, and refill with new lube oil. Sludge will be gone, including carbonized oil deposits.

Want the facts? Write for "Profitable Engine Desludging."

New Method for Curb Cleaning Radiators

Magnus 755 once more has shown its surprising versatility as a cleaner. In rapidly increasing numbers, service garages are using this cleaner for radiators. It is used in the ratio of one part to two parts of radiator water. With blocked-off grille, engine is run *outdoors* until it begins to steam. The system is then drained and flushed. A back-flush through the bottom hose connection and a final blow with compressed air, if available, produce very satisfactory cleaning.

Magnus 755 seems to loosen and dissolve all the grease, destroy the materials that bind the loose pieces of rust and sediment in place. All harmful foreign matter is washed out when the system is flushed.

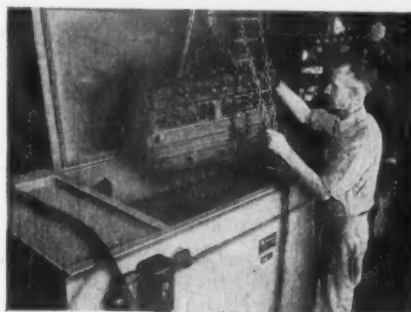


Clean Engines Four Times Faster!

Cut Cleaning Costs up to 75%

This is not a wild promise! It's based on the actual experience of a great many users of the Magnus Aja-Dip Cleaning Machine, with Magnus Heavy Duty Cleaner. These machines speed up engine and parts cleaning by really surprising margins. They eliminate virtually all hand work. Cleaning quality is materially superior to that obtained by manual methods or from ordinary machines and cleaners.

The machine illustrated is typical. It's a #3 unit, capable of cleaning in *one* hour as many blocks and parts as were formerly turned out by soaking and hand brushing in more than four hours.



Magnus Aja-Dip Machines cover a capacity range to meet every possible shop requirement from 10 lbs. of load to 2,200 lbs. The smaller machines can also be used with Magnus 755 to clean (without elbow grease!) carburetors, fuel pumps, pistons, connecting rods and all other parts with stubborn, carbonized oil deposits.

Largest Diesel Producer Approves Magnus Products

Not only Magnus 755, but the other Magnus products recommended for diesel engine and parts cleaning in the Magnus Automotive Cleaning Handbook, are approved for this purpose by the largest manufacturer of diesel equipment.



NEW CLEANING IDEAS

For Further Details Write Magnus

For Non-Clogging, Non-Fuming, Odorless Vapor Cleaning, use Magnus Liquid Vapor Cleaner (92K, light duty; 94K, heavy duty). Instantly dissolves, without pre-mixing. Use in any machine. No. 52

Ever Have Extra Muddy Bodies to Clean? You'll be pleasantly surprised with the fast, easy job Magnus Liquid Carfoam does. Just sponge or rub off with the Carfoam solution, followed by a water rinse. No dry-off is necessary. No. 53

If Your Concrete Floors Are Extra Greasy, particularly where stains are old, with caked, dried grease, they are easily cleaned with Magnusol-kerosene mix. Spray on, let soak, flush with water, just as you use Magnusol for cleaning engines and chassis. No. 54

Magnus Hot Dip Tanks for Engine Blocks cut laborious scraping or brushing to a minimum, and turn out a load of thoroughly cleaned blocks and heavy parts in 3-5 hours. Available in a range of 10 sizes. No. 55

Keep Your Bunk Rooms Sweet and Clean. You'll find Magnus 55-P, the solvent soap cleaner, mighty useful in cleaning up finger marks, soot, foot marks and even writing on the walls! Easy to use, quick, harmless to paint. You'll find you won't have to paint as often . . . and the drivers will like the clean, refreshing odor 55-P leaves. No. 56

For Small Volume Parts Cleaning . . . The Magnus Kol-Dip Tank

Requires no heat . . . no power. Engine parts are dropped into the first compartment (containing Magnusol and kerosene or safety solvent) and left there until needed. Then you lift them out, move to the second compartment and flush clean with tap water under pressure.

For any parts with carbonized oil, "varnish," etc., you use the small third tank with Magnus 755 to soak $\frac{1}{2}$ hour, or until you need them. Then they are flushed clean in the middle compartment.

The Magnus Kol-Dip Tank needs no supervising labor. It's on the job all the time, cleaning and *holding* parts until they are wanted.

Magnus Chemical Company, 174 South Ave., Garwood, N. J. In Canada - Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que. Service representatives in principal cities.



Whiz
TUNE UP
with
MOTOR RHYTHM

A TUNE-UP FORMULA
IMPROVES EXISTING MIXTURE
BURNING CLEANER
GIVES POWER - SAVES FUEL
REMOVES CARBON FROM VALVES
EXTREMELY PLEASANT TO HANDLE

A PRODUCT OF **Hollingshead**
LEADER IN MAINTENANCE CHEMICALS



Williams
SUPERTRENCHES - SUPERSOCKETS

J. H. Williams & Co., Buffalo 7, N. Y.
"The Wrench People"




For Faster and More Accurate BATTERY TESTING

IMPERIAL "K"
No. 515-T
BATTERY HYDROMETER

★ Thermometer Type
★ Shatterproof Glass Jar

ORDER FROM YOUR JOBBER

THE IMPERIAL BRASS MFG. CO.
1217 W. Harrison St. Chicago 7, Ill.

COIL ACTION KITS



Announcing a complete new line of front wheel coil action pivot pin kits. 28 numbers to fit all popular cars. Attractively boxed and labeled. Write for catalog sheet. VAN Parts are sold thru leading Jobbers. If your Jobber can't supply you, write and give us his name.

VAN BERGEN & GREENER, INC.
1619 N. Mayne Ave., Chicago 47, Ill.

356 Venable N.W. 2727 Oak St. 2306 N. 15th St.
ATLANTA KANSAS CITY PHILADELPHIA

Manchester Named Sales Head of Edison Division

Thomas A. Edison, Incorporated, of West Orange, New Jersey, has appointed A. A. Manchester as sales manager of its newly formed Automotive Division. Products include batteries, spark plugs, magnets and other automotive products.

Manchester has been associated in various capacities with Edison for the past 27 years, the last ten of which were as sales manager of the now dissolved Emark Division of Edison.

He is a member of the National Federation of Sales Executives, the Northern New Jersey Sales Executive Club and the Association of American Battery Manufacturers.

Important Fleet Test Run By Petroleum Industry

The petroleum industry hopes to get a final answer on the much discussed question of whether sulphur is an undesirable element in gasoline as a result of extensive Department of the Army tests being conducted by seven commercial fleets. Trucks of all types and passenger cars, some 62 vehicles in all, are to be used by the fleets. The tests are to be run under all conditions and will utilize various classes of special fuels. About 1½ million vehicle miles will be run to determine optimum sulphur content. Results will determine sulphur content in gasoline specifications for both Army and Navy as well as other government agencies. Primary reason for using commercial fleets in the tests is that more normal conditions can be approximated than if they were held at Fort Knox as originally planned.

There is a difference



D & T
ENGINEERED
WHEEL WEIGHTS
TURNER MFG. CO.
Kokomo, Indiana

WEED

SELL · SERVICE ·
REPAIR ·
TIRE CHAINS

Always Recommend
WEED AMERICAN
V BAR-REINFORCED

The Best Buy in
TIRE CHAINS



Reinforcing Bars on Cross Chains Provide More Traction. Greater Safety, Longer Mileage

CARBUSOL
CLEANS

Pistons,
Carburetors,
Fuel Pumps —
FASTER!



5 GAL.
DEALER'S NET \$9.50

The KLEEN-FLU Company · N. Y. 18, N. Y.
Sold by leading Automotive Jobbers Coast to Coast

MAREMONT
HAS WHAT
IT TAKES

MUFFLERS — TAILPIPER
ALLOY STEEL SPRINGS

MAREMONT AUTOMOTIVE
PRODUCTS, INC.
So. Ashland at 14th St.
Chicago 6, Illinois



You Can Rely On
FRENCHTOWN
INSULATORS

Used by more spark plug manufacturers than any other.

FRENCHTOWN PORCELAIN CO.
81 Muirhead Ave., Trenton, N. J.
(Factory: Frenchtown, N. J.)

Genuine
SERVICE
INDIANAPOLIS
"Measurably Better"
SPRINGS



SERVICE SPRING COMPANY
INDIANAPOLIS 6, INDIANA

"As Is" Desludging Is Profitable!

**Make Up to \$8.00 Per Job
With Magnus 755**

Once a car owner sees what sludge looks like, even though he's been lucky enough not to have paid through the nose for repair work or maintenance caused by it, he is easily sold on a desludging job.

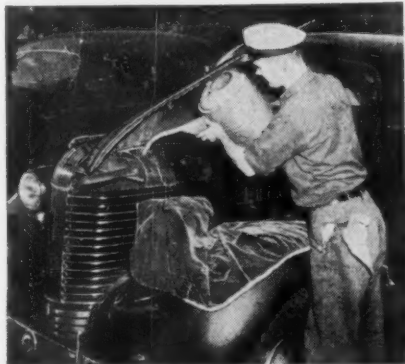
There's a nice profit for you on every one of these jobs when you use Magnus 755 for desludging. No labor . . . no tear-down. Just drain the oil from the car and replace it with Magnus 755. Idle the engine outdoors for an hour, then drain the #755. Flush with flushing oil, drain, and refill with new lube oil. Sludge will be gone, including carbonized oil deposits.

Want the facts? Write for "Profitable Engine Desludging."

New Method for Curb Cleaning Radiators

Magnus 755 once more has shown its surprising versatility as a cleaner. In rapidly increasing numbers, service garages are using this cleaner for radiators. It is used in the ratio of one part to two parts of radiator water. With blocked-off grille, engine is run outdoors until it begins to steam. The system is then drained and flushed. A back-flush through the bottom hose connection and a final blow with compressed air, if available, produce very satisfactory cleaning.

Magnus 755 seems to loosen and dissolve all the grease, destroy the materials that bind the loose pieces of rust and sediment in place. All harmful foreign matter is washed out when the system is flushed.

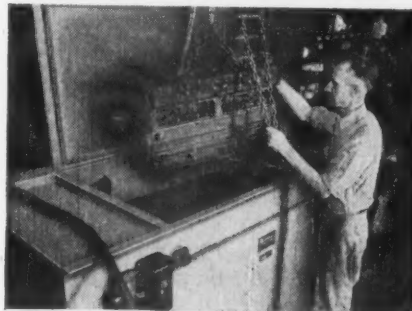


Clean Engines Four Times Faster!

Cut Cleaning Costs up to 75%

This is not a wild promise! It's based on the actual experience of a great many users of the Magnus Aja-Dip Cleaning Machine, with Magnus Heavy Duty Cleaner. These machines speed up engine and parts cleaning by really surprising margins. They eliminate virtually all hand work. Cleaning quality is materially superior to that obtained by manual methods or from ordinary machines and cleaners.

The machine illustrated is typical. It's a #3 unit, capable of cleaning in one hour as many blocks and parts as were formerly turned out by soaking and hand brushing in more than four hours.



Magnus Aja-Dip Machines cover a capacity range to meet every possible shop requirement from 10 lbs. of load to 2,200 lbs. The smaller machines can also be used with Magnus 755 to clean (without elbow grease!) carburetors, fuel pumps, pistons, connecting rods and all other parts with stubborn carbonized oil deposits.

Largest Diesel Producer Approves Magnus Products

Not only Magnus 755, but the other Magnus products recommended for diesel engine and parts cleaning in the Magnus Automotive Cleaning Handbook, are approved for this purpose by the largest manufacturer of diesel equipment.



NEW CLEANING IDEAS

For Further Details Write Magnus

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Magnus Chemical Company, 174 South Ave., Garwood, N. J. In Canada - Magnus Chemicals, Ltd., 4040 Rue Masson, Montreal 36, Que. Service representatives in principal cities.



WITH

MASTER RECAMS

MASTER RECAMS are individually designed for all late model cars; easily installed without removing pistons. The profitable way to Stop Piston Slap, Oil Pumping and Motor Noise.



50¢ EACH

Regular Discounts to Jobbers and Dealers

WHERRY ENGINEERING COMPANY
3227-29 Morganford Rd., ST. LOUIS 16, MO.

When the Motor is Down
Build it Up with...



CLUTCH FACINGS • RIVETS

WELL, CHARLOTTE, JUNIOR FOXED YOU - NO CHANCE TO PLUG - SOUTHERN BRAKE LINING...

...BUT WE'RE ALL GLAD TO SAY...

ST. NICKS PARADE

MERRY CHRISTMAS EVERYBODY

AND REMEMBER DEC 8 - TO 15 - A-S-I-S - SHOW BY RS-PA-MWA AND MEMA

SOUTHERN

FRICITION MATERIALS CO. - CHARLOTTE, N.C.

BRAKE SHIM STOCK • RELINING EQUIPMENT • HYDRAULIC BRAKE PARTS • BRAKE FLUID

D-21—Driver Electric Engine Heating Unit

An electric heater for placing under the hood of cars or trunks to insure starting in cold weather has just been announced by the W. T. Driver Company. Consisting of a coil-type heating element, enclosed in a perforated metal cylinder equipped with suspension hood and cord, the unit is designed to prevent moisture condensation in the carburetor as well as to heat the engine. It will not become hot enough to ignite raw gas or gas fumes. It is available in 150 watt or 300 watt models.

(For further information use coupon on p. 62)

D-22—Hazelite Lens

The Hazelite Plastic Clip-On Fog Lens eliminates the necessity of installing and wiring special fog lights. Made of a heat resistant, water-repellent plastic, it can be installed without tools and is adaptable to all 40/30 sealed beam headlights which have been installed on all cars manufactured since 1940.

(For further information use coupon on p. 62)

Packard Appoints Greiner General Sales Manager

Appointment of Karl M. Greiner as general sales manager of the Packard Motor Car Company was announced recently by G. T. Christopher, president and general manager.

As merchandising head of all sales and service operations, he succeeds Lyman W. Slack whose resignation was accepted earlier this week.

Greiner has been Packard's parts and service manager since September, 1943.

KEEP OIL FREE FROM ABRASIVES



PUROLATOR PRODUCTS, INC.
Newark 2, N. J.

Founder and leader of the oil filter industry

THE ANDREWS LINE...

Your Best Electrical Connection

CUSTOMER SATISFACTION SINCE 1921

Andrews
MANUFACTURING CO.
ST. LOUIS, MO.

THE NEW Hyland HONE

Saves Time • Low Price • Guaranteed



No. 18 — \$3.90

1/4" to 1"

No. 20 — \$3.90

1" to 1 1/2"

No. 30 — \$4.15

1 1/2" to 2"

No. 50 Set Services Brake Cylinders 1/4" to 2" \$11.95
HYLAND MANUFACTURING COMPANY
318 JOHN STREET PORTSMOUTH, OHIO

Ask about the

FOX

RAPID

BATTERY CHARGER

FOX PRODUCTS COMPANY

PHILADELPHIA 41, PA.

The NEW Exide

The dependable battery that millions of car owners want.

THE ELECTRIC STORAGE BATTERY COMPANY, Philadelphia 32
Exide Batteries of Canada, Limited, Toronto

WHEN IT'S AN EXIDE...YOU START

Gear Pullers

GARAGE TOOLS

CARBON SCRAPER
CREEPER CASTERS
BUSHING REMOVERS
REAMERS

Cal-Van
MACHINE PRODUCTS INC.

★ Write for Catalog 809 WATER ST. JACKSON, MISS. U.S.A.



Imagine insulation that's as much at home in iceberg country as a polar bear and happy as a 'gator in steaming jungle heat, too. That's neoprene . . . and that's the insulation we use in Blue Streak ignition cable sets.

You're sure to please customers with Blue Streak

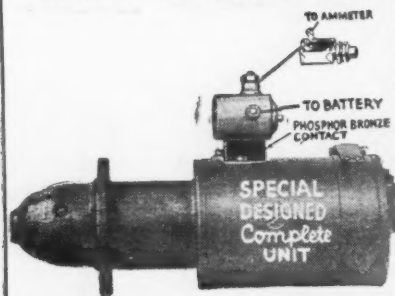
cable, because neoprene resists "corona", abrasion, gasoline, oil, age and heat — the usual trouble-makers.

So if you've never tried Blue Streak cable, make the switch soon. You'll please more customers and you'll earn more too. Isn't it worth a try?

*better your business... buy **Blue Streak***

STANDARD MOTOR PRODUCTS, INC., LONG ISLAND CITY 1, NEW YORK

Now Available



Universal Change-Over SOLENOID STARTER UNIT

Designed and built for durable service and performance. Every Chevrolet and Plymouth owner needs this unit. Fits all cars with regular Bendix Starter.

Sold Only Thru Jobbers

Manufactured & Distributed by
AUTOMOTIVE MAN'F'G. Co., Inc.
570 W. FULTON ST. CHICAGO 6, ILL.

FOR AUTOMOTIVE PARTS AND SUPPLIES...

Your NAPA Jobber is a Good Man to Know!

NAPA
Is the Largest Independent Organization in the Parts Industry

Assurance of Quality

When in DETROIT

Whether on business or pleasure-bent, make this "Goodwill Hotel" your headquarters. Located right in the center of everything... a block east of Woodward Avenue on Elizabeth Street, overlooking Grand Circus Park, Hotel Wolverine is accessible to all sections of the city.

500 rooms... each with tub and shower. Good food. Ample parking space; garage service also available.

Home of THE TROPICS... most unusual night spot in Detroit. Romantic South Seas atmosphere.

HOTEL WOLVERINE
"The Goodwill Hotel"

RATES FROM
\$2.50 SINGLE • \$4.00 DOUBLE

Sterling Tool Products Announces Promotions

J. A. Proven, vice president and general sales manager for Sterling Tool Products Company, Chicago, manufacturers of portable electric and air driven sanders, recently announced several advancements.

D. A. Hutchinson, formerly district sales manager for the Illinois, Wisconsin, Indiana territory for Sterling, has been advanced to the position of assistant sales manager for the company. In his new position he will direct the company's sales activities with their domestic distributor organization. J. M. Warnimont, who formerly held the title of assistant sales and advertising manager, now becomes advertising manager, devoting his entire time to the advertising and promotional activities of the company.

National Bushing Takes Over Midwest in Preston

The National Bushing and Parts Co. has announced the completion of the transaction of taking over the Midwest Automotive Jobbers of Preston, Minn. They will operate this business from now on under the name of the National Bushing & Parts Co., which gives the company 9 locations equipped with automotive parts, supplies and equipment, and with machine shops.

The company will operate on a wholesale basis, carrying a stock of nationally advertised lines similar to those carried in all their other stores.

Gordon Kjos, a former resident of Preston, who has been with the National Bushing & Parts Co. of Rochester for years, will take over the desk, and also help on service to the trade.



SPEAKER TUBE AND TIRE REPAIRS

One Reliable Source for all your needs
Electromatic Vulcanizer • Match Patch Vulcanizer • Match Patches • Electro-Patches • Rubber Rivets • Replacement Valves • Electro-Timer • Casing Patches • Convertible Tire Valves • Valves and Caps • Motorists' Kits • Solvents • Beveled Patches.
J. W. SPEAKER CORP. • Milwaukee 12, Wis.

RESISTOFLEX
flexible
GASOLINE and OIL LINES
WITH COMPART TUBE
RESISTOFLEX CORPORATION
Belleville 9, New Jersey
PLANTS: BELLEVILLE, N. J.
ELKHART, IND. TORONTO, CANADA

Shurhit
Triple Seal Moisture-Proof
CONDENSERS

Ask your Shurhit jobber or write us for details on these super-quality replacement parts. Complete Shurhit line includes Condensers, Contact Points, Rotors, Caps, Coils, Brushes, Cut-Outs, Switches, and Spark Plugs.

SHURHIT PRODUCTS, INC.
Waukegan, Ill.

WOLF'S HEAD
IS 3 STEPS AHEAD
WOLF'S HEAD
MOTOR OIL AND LUBES
100% PURE PENNSYLVANIA
P.G.C.O.A. Permit No. 6

• **RUGER** •
Hydraulic
FLOOR CRANES
and Arbor Presses
RUGER EQUIPMENT CO., Inc.
2425 St. Clair Ave. P. O. Box 3821
Cleveland 14, Ohio Portland 8, Ore.

Quality Tools for the Professional Mechanic



Complete line of mechanics tools consisting of open end wrenches, combination wrenches, socket wrenches, and attachments, chisels, punches, pliers, hammers, screw drivers, metal boxes, drills, and other allied tools.

Serving Garage Trade in All States
Catalog Mailed on Request
THE MECHANICS TOOL & FORGE CO.
Sabina, Ohio

The Right Combination for Increased Auto Bulb Sales



1 PRODUCT—From headlight to tail light, there's a Westinghouse Lamp for every automotive purpose. Manufactured to the high standards set by the automotive industry, a Westinghouse lamp assures your customer of top performance.

2 COMPLETE MERCHANDISING HELPS—Promotional material prepared by Westinghouse to help you increase your sales volume.



OFFER No. 1 Contains:

Easeled Display Card
Window Streamer
Colorful Window Decal
Handy Tax Card
Complete Guide Booklet

OFFER No. 2 Contains:

Auto Lamp Display
Window Streamer
Handy Tax Card
Guide Chart to Auto Bulbs

FREE AD MATS & INSERTS

Use this free material for your own advertising and promotion. Write for Bulletin No. AM968.

Lamp Division, Dept. MA-12,
Westinghouse Electric Corporation,
Bloomfield, N. J.

AVAILABLE AT NO CHARGE WITH AN ORDER OF 50 LAMPS



Send for this helpful booklet containing complete information about selecting, installing and servicing Westinghouse Auto bulbs. Order by form No. AM864.

Westinghouse

PLANTS IN 25 CITIES . . . OFFICES EVERYWHERE

Want to see your customers' faces light up?

PEOPLE naturally want to know what they're getting for their money. That's why—on bearing replacements—you should always tell your customer when he's getting Timken tapered roller bearings!

He has been sold on Timken bearings for years—through long, dependable service and consistent national advertising. He *knows* they're best!

So, if you want to see your customers' faces light up with approval and respect for your workmanship...



... *Just tell 'em it's "TIMKEN"**



Actually, Timken bearings normally outlast the car itself! They take any combination of radial and thrust loads, eliminate friction, reduce wear, and keep parts in rigid alignment. That's why they're first choice of car, bus and truck manufacturers everywhere.

The Timken Company is the only bearing manufacturer in America which makes its own steel. And it is the undisputed leader in: 1) advanced design; 2) precision manufacture; 3) rigid quality control; 4) special analysis steel.

To keep your reputation for good service head-and-shoulders above the rest, make sure the "Timken" trade-mark is on every tapered roller bearing you install. The Timken Roller Bearing Company, Canton 6, O.

TIMKEN

*TRADE-MARK REG. U. S. PAT. OFF.

TAPERED ROLLER BEARINGS

NOT JUST A BALL  NOT JUST A ROLLER  THE TIMKEN TAPERED ROLLER  BEARING TAKES RADIAL  AND THRUST  LOADS OR ANY COMBINATION 

IT'S THE

ROTARY
IMPACT

THAT DOES IT

**NO KICK
NO TWIST
EVEN ON THE
TOUGHEST JOBS**

AMAZING
all-purpose
ELECTRIC TOOL
will

- Drill up to $\frac{1}{4}$ " dia.
- Ream up to $\frac{1}{2}$ " dia.
- Tap up to $\frac{1}{2}$ " dia.
- Run Nuts up to $\frac{3}{8}$ " dia.
- Drive Screws up to $\frac{3}{8}$ " dia.
- Hole Saw up to $1\frac{1}{2}$ " dia.
- Bore Wood up to $\frac{29}{32}$ " dia.
- Drive Studs up to $\frac{3}{8}$ " dia.
- Drill Masonry up to $\frac{3}{8}$ " dia.
- Extract Broken Studs up to $\frac{3}{8}$ " dia.
- Wire Brush up to $\frac{3}{8}$ " dia. shanks.

(Uses Standard Attachments)



AMAZING! No Kick—No Twist—Even if you stall the spindle completely, the motor continues to run.

AMAZING! It's Reversible—full power in either direction—runs on 110V ac-dc.

AMAZING! It saves up to 90% of the time on nut-running operations alone.

AMAZING! With Standard Attachments you need only ONE INGERSOLL-RAND IMPACT TOOL to do all operations.



Ingersoll-Rand

11 BROADWAY, NEW YORK 4, N. Y.

144-18

Re-Wire With
PACKARD FOUR-FORTY
IGNITION CABLE SETS AND SPOOLS

USE THE IGNITION CABLE THAT'S
BETTER 7 WAYS

- 1) Better HEAT Resistance
- 2) Better COLD Resistance
- 3) Better OIL Resistance
- 4) Better MOISTURE Resistance
- 5) Better ABRASION Resistance
- 6) Better CORONA Resistance
- 7) Better AGE Resistance

The special-compound protective sheath on Packard Four-Forty makes the difference!

It stands up under *all* conditions of automotive use . . . doesn't break down, puncture, rupture, crack, rot or fray like ordinary cotton-braid-and-lacquer coverings.

That's why Packard cable with a similar protective sheath is used by leading airlines, where the best is always demanded.

That's why Packard Four-Forty provides longer life and better performance in your customers' cars and trucks.

Always re-wire with Packard Four-Forty. Your jobber has it *now*.

THERE'S MORE
MPR^{*}
(*Miles Per Replacement)
IN PACKARD CABLE

Packard
REG. U.S. PAT. OFF.
TRADE MARK



Packard Electric Division, General Motors Corporation
Warren, Ohio

FOREMOST BUILDER OF AUTOMOTIVE AND AVIATION WIRING

Here's where REINFORCEMENT

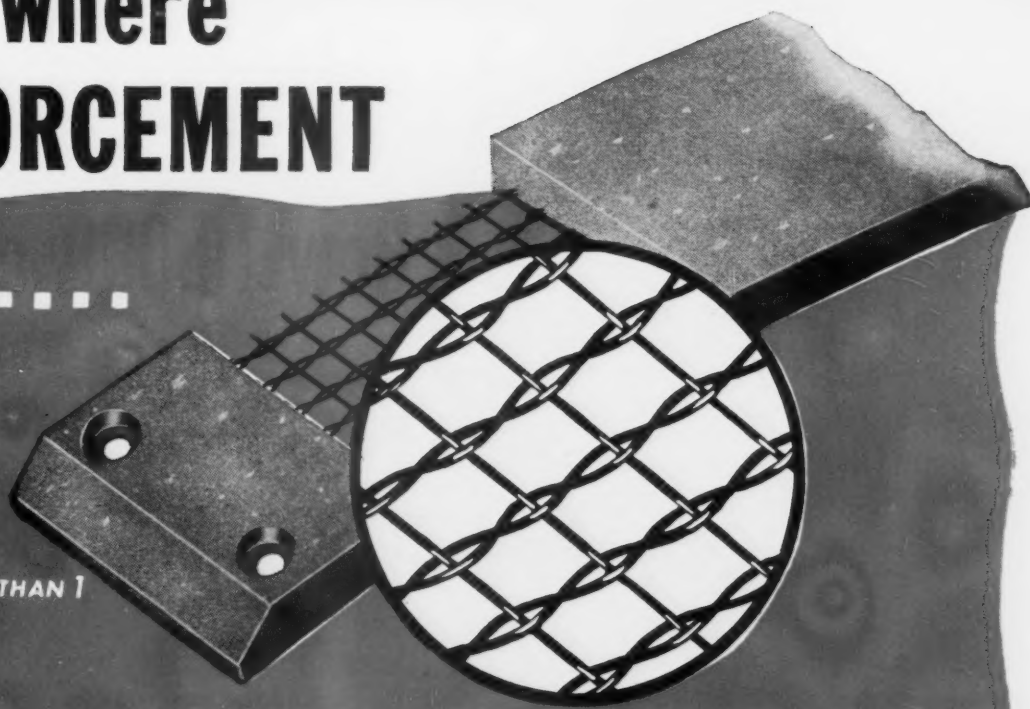
Pays



2 WIRES ARE BETTER THAN 1



NO DAYLIGHT BETWEEN LINING AND SHOE



GRID LOCK Wire Back Reinforcement makes WORLD BESTOS Brake Lining *better*

• Improving upon accepted practice, GRID LOCK reinforcement provides two tough interlocked wires where only one is usually used. It puts them where such extra strength pays in better braking.

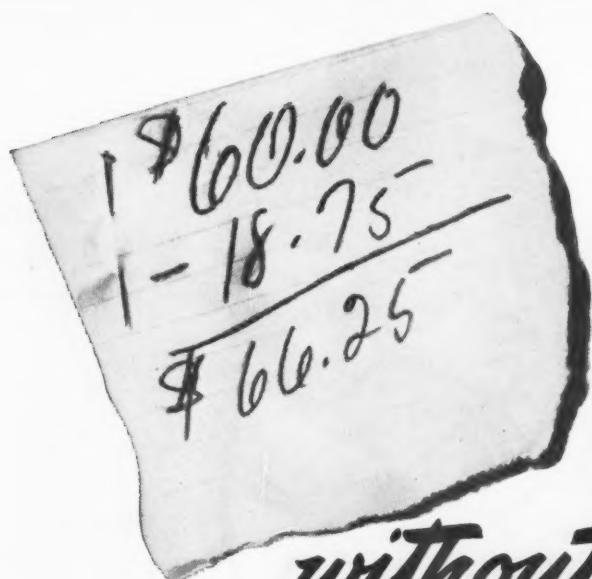
As a result, "spot bulge" is prevented when riveting the lining to the brake shoe, spoiled linings are avoided, spongy brake pedal is eliminated along with "daylight" between lining and shoe.

GRID LOCK is a WORLD BESTOS development — one of a number of reasons why WORLD BESTOS linings are leaders in popularity. It is typical of the entire WORLD BESTOS line of specially-engineered brake products for every type of service.

WORLD BESTOS
CORP.

NEW CASTLE, INDIANA

6142



How 19,000 companies up take-home pay *without upping payrolls*

Can you deduct \$18.75 from \$60.00 and get \$66.25? Yes. And the way you can do it is mighty important to your company—and to the nation!

You start with \$60, representing someone's weekly take-home pay. You deduct \$18.75 for the purchase of a U.S. Savings Bond. That leaves \$41.25. But \$41.25 isn't what the worker takes home. He takes home \$41.25 *plus* a \$25 Savings Bond. Total (assuming he holds the Bond till maturity): \$66.25.

WHAT 19,000 COMPANIES HAVE LEARNED

In the 19,000 companies that are operating the Payroll Savings Plan for the regular purchase of Savings Bonds, employees have been more contented in their jobs—absenteeism has decreased—even accidents have been fewer!

Those are the "company" benefits the Plan provides, in addition to extra security for individual employees.

But the Plan has other, far-reaching benefits of basic importance to both your business and the national economy...

SPREADING THE NATIONAL DEBT HELPS SECURE YOUR FUTURE

The future of your business is closely dependent upon the future economy of your country. To a major extent, that future depends upon management of the public debt. Distribution of the debt as widely as possible among the people of the nation will result in the greatest good for all.

How that works is clearly and briefly described in the free brochure shown at the right. Request your copy—today—from your State Director of the U. S. Treasury Department's Savings Bonds Division.

ACTION BY TOP MANAGEMENT NEEDED

The benefits of regular Bond-buying are as important today as ever—but war-time emotional appeals are gone. Sponsorship of the Payroll Savings Plan by a responsible executive in your company is necessary to keep its benefits *advertised to your employees.*

Banks don't sell Savings Bonds on the "installment plan"—which is the way most workers prefer to buy them. *Such workers want and need the Payroll Savings Plan.*

Those are the reasons why it's important to make sure that the Plan is adequately maintained in your company.

The State Director will gladly give you any assistance you wish.

"The National Debt and You,"

a 12-page pocket-size brochure, expresses the views of W. Randolph Burgess, Vice Chairman of the Board of the National City Bank of New York—and of Clarence Francis, Chairman of the Board, General Foods Corporation. Be sure to get your copy from the Treasury Department's State Director, Savings Bonds Division.



The Treasury Department acknowledges with appreciation the publication of this message

This is an official U.S. Treasury advertisement prepared under the auspices of the Treasury Department and the Advertising Council



Use Genuine
FORD
PACKAGED
REPAIR KITS

and Watch Your Ford Business Grow!

THEY'RE BACK AGAIN—the Genuine Ford Packaged Repair Kits that are best for Fords! These great Ford service business builders work for you three ways—

1

Genuine Ford Parts are best for Fords—they're the parts that are made right, fit right, last longer!

2

By installing parts in groups, Genuine Ford Packaged Repair Kits build dollar volume per order.

3

Each kit is complete . . . no lost time patching old parts, reordering forgotten items.



Genuine Ford Fuel Pump Repair Kit

Contains every part necessary to rebuild fuel pump . . . all steel surfaces hardened to exact specifications . . . diaphragm of long staple combed yarns, multi-twisted and chemically treated to withstand oil, gas, and sub-zero temperatures . . . stroke dimensions accurate to .001 of an inch. Get and keep more Ford service business with Genuine Ford Parts—made right, fit right, last longer!

NOW AVAILABLE . . .

FUEL PUMP KITS • WATER PUMP KITS • SPINDLE BOLT AND BUSHING KITS • UNIVERSAL JOINT KITS • CONNECTING ROD BEARING KITS • AND MANY OTHERS

Order from your nearest Ford Dealer or Ford Parts Distributor

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MOTOR AGE will bring a complete review of the Automotive Service Industries Show in its January 1948 Show Review Issue.

Here will be the real story of the automotive after-market as it is and as it will be in 1948, for this issue will not only review the Show—with material gathered by the entire Editorial Staff at Navy Pier—but it will serve as a road map for the coming year in the business from which you make your living.



Watch for this issue. Read every page of its editorial content. Don't miss a single advertisement. And when you get through you will have important knowledge and a valuable reference volume to help you make good in a big way in 1948.

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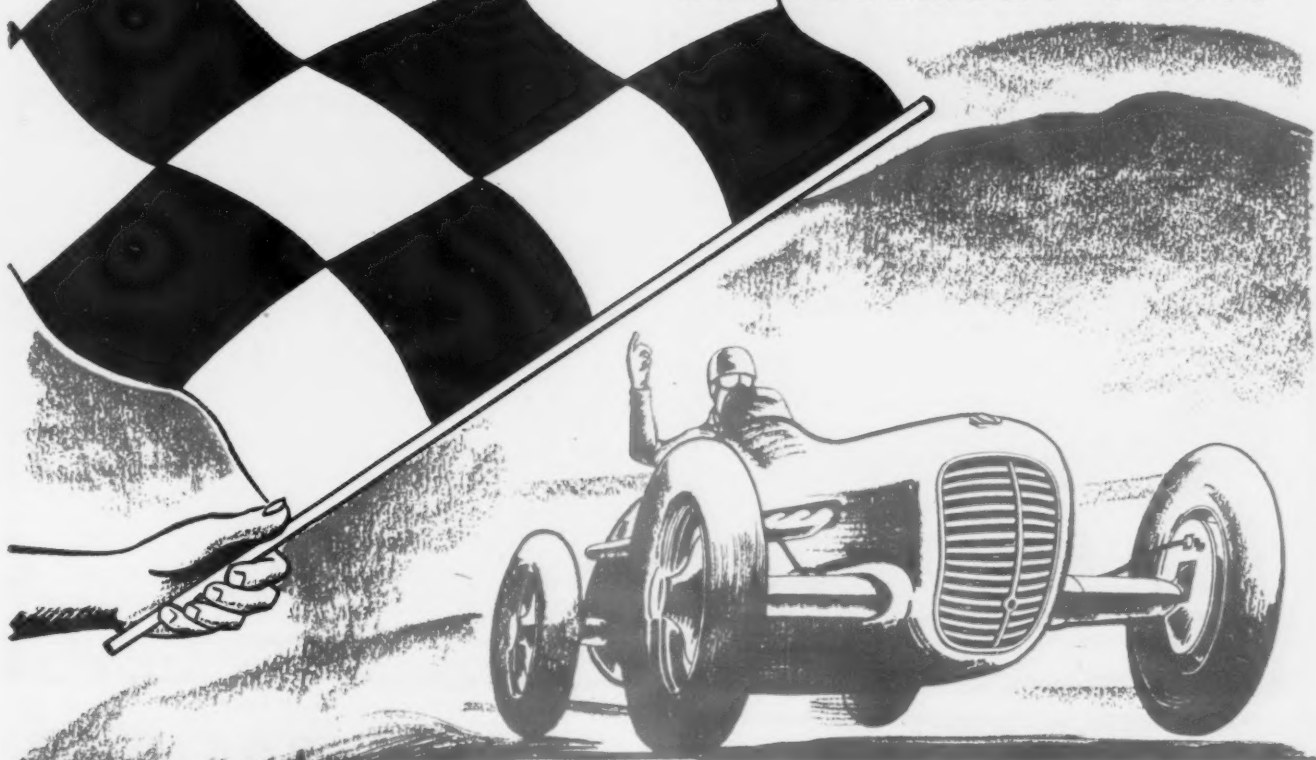
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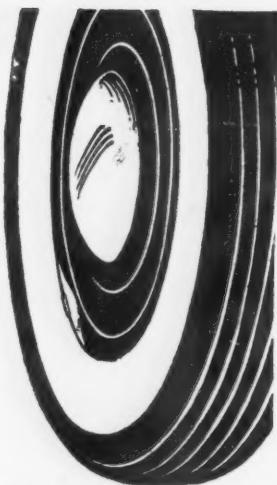
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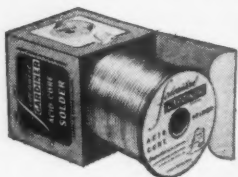
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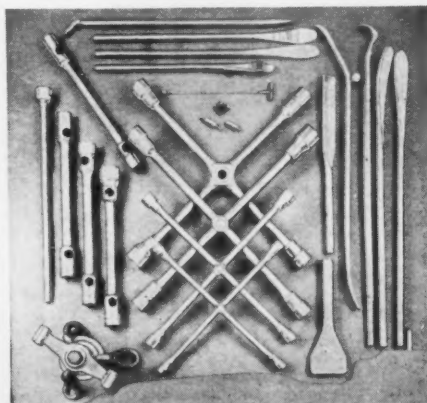
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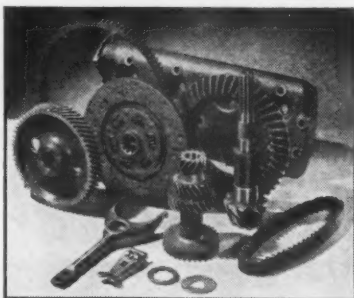
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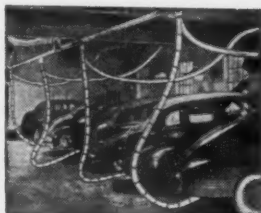
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A TRUCK GOVERNOR THAT GUARANTEES

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Added Operating Efficiency...Easier Installation

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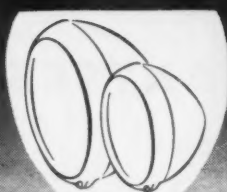
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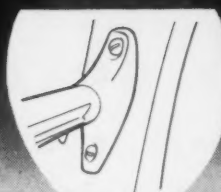
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Solid Brass Head



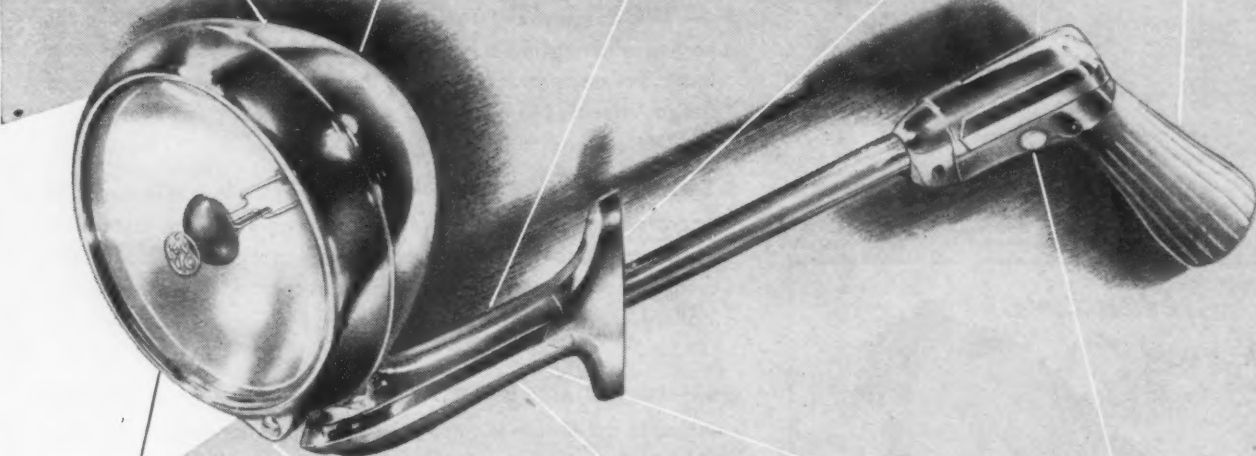
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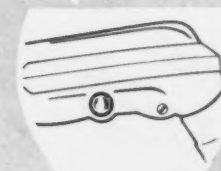
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